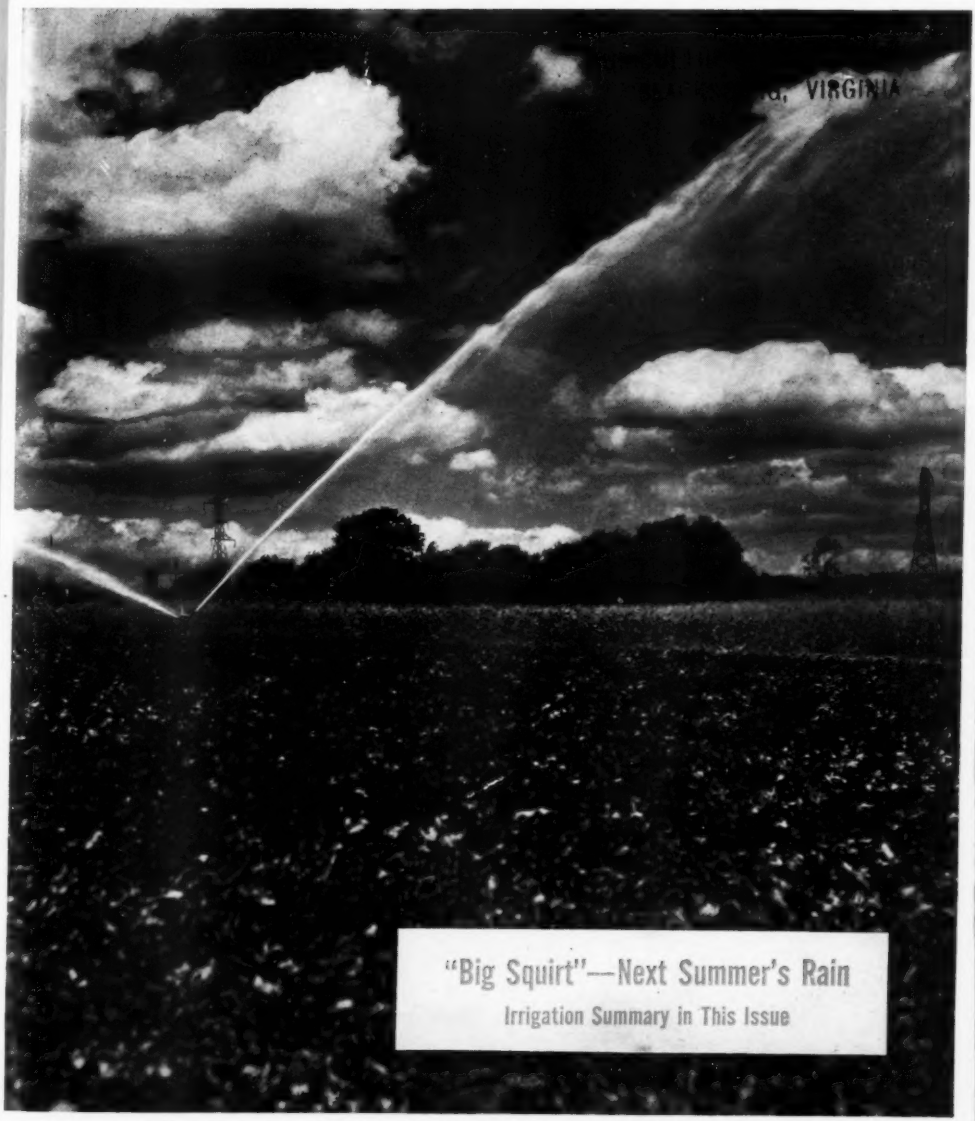
ELECTRICITY ON THE FARM *Magazine*

FEBRUARY, 1950

Ventilation for Cows and Hens
Infrared Lamps for Farm Use
Keep the Hardware Out of Cows
Electric Breakfast Time Savers
Johnny Williams' Bulb Snatcher

23rd Year . . . . . No. 2



"Big Squirt"—Next Summer's Rain

Irrigation Summary in This Issue

A CASE-SHEPPERD-MANN PUBLICATION

EQUIPPED WITH GENERAL ELECTRIC MOTOR

For the best in electrified farm equipment . . .

GENERAL ELECTRIC FarmNews

EQUIPPED WITH GENERAL ELECTRIC CONTROL

. . . look for these labels whenever you buy.

MORE POWER TO THE AMERICAN FARMER through more electricity on the farm

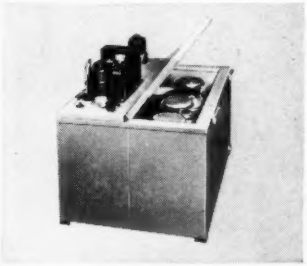
5¢ A DAY BUYS "CITY WATER SERVICE"!

COOLS MILK FROM 90°F TO 50°F OR LOWER IN 40 MINUTES

This top-opening type cooler reduces milk temperature from 90°F to 50°F or lower in 40 minutes. This quick cooling action is produced by means of an agitating pump which prevents the accumulation of warm water around the milk cans. The pump also sprays cold water on the necks of the cans to speed cooling of "top" milk.

Ruggedly constructed

Built of heavy-gauge galvanized steel, it is heavily insulated, and has a rustproof tank that holds 6 ten-gallon milk cans. It comes equipped with thermostatic control and is available with General Electric motor and compressor. For more details, check "Milk Cooler" in the coupon.



A milk cooler will save enough money in ice costs to quickly pay for itself.

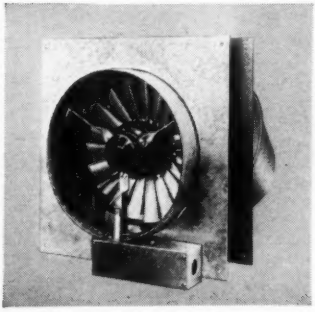
"ELECTRIFIED FARMING" . . . is coming your way. Look For It!

General Electric's new 16mm full-color, sound movie, entitled "Electrified Farming," will be released soon! It's good entertainment, yet packed with ideas that can help you get more work done faster.

Watch this page next month for more specific information on how this film will be distributed.

Mrs. A. C. Pittard, Atlanta, Ga., finds running water makes housework easier.

NEW POULTRY HOUSE VENTILATOR



By maintaining a constant circulation of fresh, clean air, this 10-inch poultry house ventilator helps keep birds healthy, litter dry and prevents building decay. It uses no more current than a 60-watt light bulb and moves either 300 or 500 cu. ft. of air per minute, depending on the temperature. Galvanized housing and stainless-steel fan resist rust and corrosion. This ventilator comes complete, is easy to install—there is nothing to build. Totally enclosed G-E motor assures quiet, dependable operation. For more details, check "Poultry House Ventilator" in the coupon.

Right size, type of pump key to low-cost service

Water system comes in capacities, pressures to meet all farm needs

An automatic water system is available on the market in sizes and models that offer a wide variety of capacities and pressures. It is designed and built for shallow *or* deep well service — a dual-purpose feature which protects your investment if water levels drop during dry periods. Since the pump has only one moving part, maintenance is kept to a minimum. The pump is equipped with a G-E motor to provide reliable, quick-starting driving power. For more details, check "Automatic Water System" in the coupon.

A. C. Pittard, Atlanta, Ga., says his automatic water system is the hub of his farm operations.

General Electric Company
Section E669-109 Schenectady 5, N. Y.

I would like additional information on the following equipment:

- ☐ Water System
- ☐ Poultry House Ventilator
- ☐ Milk Cooler

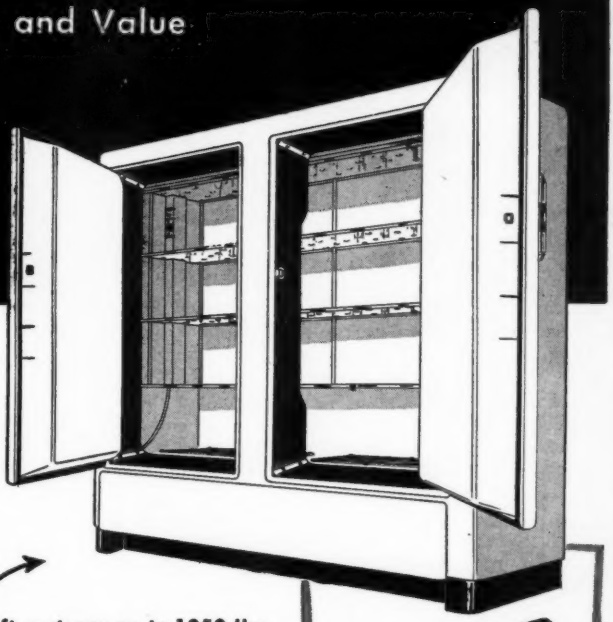
NAME_____

ADDRESS_____

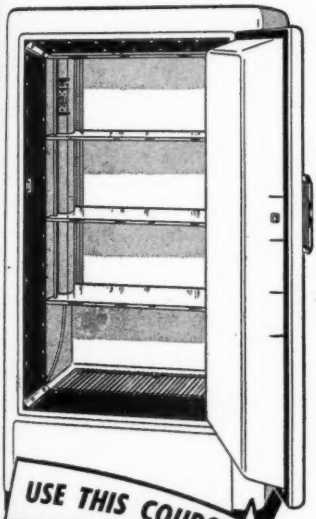
CITY_____ STATE_____

Get More Convenience and Value
in a Big Capacity

PHILCO FARM FREEZER



To keep a large supply of many frozen foods in apple pie order, easy to get at for every meal, everyday—choose a big capacity UPRIGHT PHILCO FARM FREEZER. No time lost in finding the foods you want. No expensive installation . . . just plug it in. Economical and dependable. Fully covered by 5-Year Warranty.



30 cu. ft.—stores up to 1050 lbs. PHILCO DV-301. Huge 2-door farm freezer has 3 full-width refrigerated shelves that evenly distribute cold through entire interior. Sharp freezing on any shelf. Sub-zero cold is economically maintained by sealed power system. Locking Latches. Guardian Bell rings if current fails.

15 cu. ft.—stores up to 525 lbs. PHILCO DV-151. Same efficient interior design with full-width refrigerated shelves, and bottom grid which aids air circulation. Temperature control from "sub zero" to "zero zone". Locking Latch. Guarddian Bell. Hermetically Sealed Unit.

USE THIS COUPON

FREE

BALL REFRIGERATOR and FREEZER JAR

Philco Corporation • Refrigeration Division
Advertising Department • Philadelphia 34, Pa.

I have seen a demonstration of the Philco Farm Freezer by dealer named below. Please send me the free Ball Freezer Jar offered in "Electricity on the Farm".

YOUR NAME_____

ADDRESS_____

DEALER'S NAME_____

DEALER'S SIGNATURE_____

Yours just for seeing a demonstration of Philco Farm Freezers at your Philco Dealer. Just have him sign the coupon at left and mail it to Philco. We will send free "Ball" jar by return mail. Offer good only while our supply lasts. Hurry!

Editor's Chat

FUSE FUSSIN'

I'm going to do a little fussin' about fuses. My friend Jake Van Aernam and "Buck" Carney up in Albany, New York, have been fussin' about fuses. And their fussin' has lowered the fire losses in the territory and helped a lot of folks to enjoy their electricity more.—Wherefore, my fussin'.

A fuse is a safety link placed in your wiring to keep you from burning your house down. When you put too many lamps or appliances into use on a circuit, the fuse link "blows" (opens the circuit) before the wires in your walls get dangerously hot. Or, if you have frayed extension cords or worn-out appliances that might short circuit and start a fire, the fuse blows first.

Now, if your house was wired before 1940 with 2-wire service, there are only two sizes of fuses for you to use—No. 30's for the main circuit and No. 15's for the branch circuits. If wired since 1940 or with 3-wire service, you should still use nothing bigger than No. 15 fuses where the branch wires used are No. 14. Should you use heavier fuses or pennies, you are just flirting with the "fire devil".

Where No. 12 wire has been used, those circuits should be fused with No. 20 fuses.

Stay with those fuse sizes! If a fuse "blows," the trouble is not in the fuse. You either have defective cords or appliances that need repairs, or your wires are too small for the load you have added. The remedy: More circuits from your fuse panel, or larger wires.

As a man grows, he must get larger pants. You may hide a small tear temporarily with a patch. But look out! Some day you'll be walking down street with no pants on—and your "fuse" will really be blown.

As the electric load grows, the wiring must also be enlarged to fit.

OUR FOREIGN POLICY

Sunday, Jan. 8. Madame Chiang Kai-shek has just given her farewell talk to America over the radio. She is going back to Formosa to aid in the Chinese "last ditch" fight for freedom.

Chiang's Nationalist government has undoubtedly made mistakes. We have sat astride the fence, pouring our dollars first on one side, then the other. If we, as a nation, knew as definitely as Madame Chiang, WHERE we are going and WHY, we would have an understandable foreign policy instead of a confused mix-up of checkers and give-away in a world game between governments.

THE PRICE OF SOCIALISM

The recent voting out of Socialism in New Zealand and Australia recalls an interview in my office. It happened a year or two ago. A manufacturer called to discuss an advertisement in our magazine. He was fair minded and friendly, and after the business was settled, we visited. The things he told amazed us. Here are just two of the incidents.

This manufacturer was born and lived most of his life in New Zealand. After some years under Socialism, he decided he could not "stomach" any more of it. He determined to move to the United States where free enterprise still prevailed. He needed some money to get a start here in business. He found a buyer for his house. A price of $10,000 was agreed to by both buyer and seller. They went together to the government real estate board to get permission to make the deal. They were told to come back in two weeks. Two weeks later permission was refused because (1) the owner had paid only $6,000 for the house originally; (2) the government would not permit him to sell it for more than $7,500; (3) the man who wanted to buy the house was not next on the government's preferred list of buyers.

Another Socialist benefit (?) was government control of personal bank accounts. If our friend wished to draw more than $100 of his own money from his bank account, he had to state what the money was to be used for, and get government approval. If he changed his mind and spent the money for something else, the government bank checked up on him. Next time he asked for permission to withdraw some of his own money, he was in trouble.

Today, after onerous struggles in getting here, our friend operates a small business in this country. He gave up his homeland and came here for freedom from dictation and to regain lost opportunities. He's been "through the mill". It would have been good for everyone who craves more and more from the government to have been in the little room with us and heard that story. Not propaganda. Facts!

Geo. W. Kable

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GEORGE W. KABLE, *Editor*
KENNETH V. ANDERSON, *Asst. Editor*
NAN SHAW, *Housekeeping Editor*
KARL H. GORHAM, *Business Manager*

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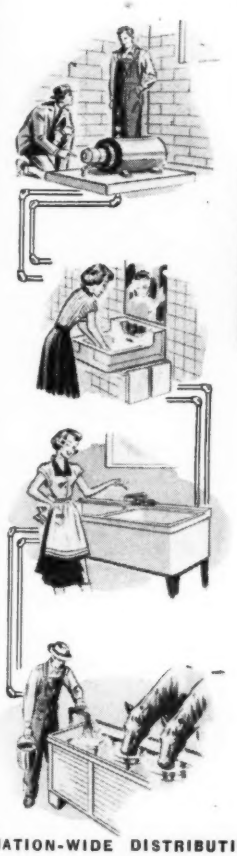
ALL YOURS WITH A CRANE WATER SYSTEM!

CRANE PUMPS, for deep or shallow wells



A BEAUTIFUL NEW KITCHEN! Crane has the sink for you . . . sizes, 36 inches to six feet . . . your choice of colors . . . every feature you could wish. Crane has the cabinets, too.

A CONVENIENT BATHROOM! Choose from complete Crane groups in a style for every taste . . . the *preferred* plumbing for farm homes.

A WORK-SAVING LAUNDRY! On laundry tubs, too, Crane provides *Dial-ese* faucets—turn as easily as your radio dial.

WATER ANYWHERE! For stock and poultry . . . for clean-up chores. Crane piping brings it anywhere.

Only Crane supplies the *complete water system*—and the cost may be less than you think! See your Crane Dealer next time you're in town.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Illinois

CRANE

PLUMBING AND HEATING • VALVES • FITTINGS • PIPE

NATION-WIDE DISTRIBUTION THROUGH BRANCHES, WHOLESALERS, PLUMBING AND HEATING DEALERS

Only Kelvinator, pioneer for 36 years, could bring you

11 to 12 cu. ft. of cold space!

in the floor space of pre-war "6's"

with giant Frozen Food Chests!

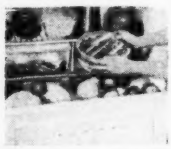
Now Kelvinator brings your farm kitchen another great advance in cold-clear-to-the-floor!

Another "first" from Kelvinator! Pioneer in automatic electric refrigeration for the home, 1914! First with cold-clear-to-the-floor, 1947! Now 1950, first with another engineering triumph, 11 to 12 cu. ft. refrigerators in the floor space of pre-war "6's"! Up to 96% more cold space.

Enjoy better farm living with these extra-value features!

More room for frozen foods! Get a giant Frozen Food Chest! Up to 80-lb. capacity. (42½-lb. in model shown.) So convenient, time-saving!

New miracle of beauty! Polystyrene, new wonder material, used for many parts, adds beauty, durability. White clear through! Won't absorb flavors.



Flexibility you need! It's easy to store a large milk can, a whole turkey with Kelvinator's adjustable shelf arrangement. It's designed for farm use!

Here's more cold space! The wonderful new, *cold* Kelvinator Super Crisper. *Over a bushel capacity.* Use it for fruits, vegetables, beverages and eggs.

COLD CLEAR TO THE FLOOR! A big "12" in the floor space of prewar "6's." It's Kelvinator's Masterpiece Model VM for the finest protection of your daily foods. With giant 42½-lb. Frozen Food Chest! Adjustable shelf! Bigger-than-a-bushel *cold* Super Crisper! Refrigerated by Kelvinator's famous Polarsphere. See 9 brilliant new models at your Kelvinator dealer's. Visit him!

FREE! *Beautiful Folder showing complete Kelvinator line. Write: Dept. FEF, Kelvinator, Division of Nash-Kelvinator Corporation, Detroit 32, Michigan.*

Get the Space...
Get the Beauty...
Get the Buy!

Get Kelvinator

THE OLDEST MAKER OF ELECTRICAL REFRIGERATION FOR THE HOME

ELECTRICITY ON THE FARM *Magazine*

ELECTRICITY: *Versatile Energy for Many Farm Uses—Power, Light, Heat, Electronics.* Easily adapted, started, controlled: automatic. Labor doer and saver, money maker, and product improver and increaser. Used intelligently, electricity changes the whole aspect of farm life and production.

Next Summer's Rain

Facts and Figures on Irrigation. Arid vs. Humid Irrigation. Crops That Pay Dividends. Water Sources. Pumps and Power. Applying the Water. Sprinkling Systems. Pointers for Planning.

By GEO. W. KABLE

This article will give you some "straight-from-the-shoulder" facts. We are not trying to "sell" you on irrigation. What we want to do is to help you decide and to "go right" if you are interested.

Here's our first shot. Don't plan to do any irrigating unless you really mean business. To get results from irrigation, you must be willing to apply yourself and learn why, when and how to irrigate. It will cost you money. For a sizeable acreage, it will mean a major investment. On the other side, if you do it right, there is always an opportunity for a good profit. In other words, applying irrigation water should be considered in the same class as applying fertilizer, buying a tractor or combine, or feeding concentrates to your dairy herd. It costs money; you use your head; you do work; and you make profits. If you are just thinking of "fiddling around" with irrigation, better forget it. If you "mean business" you can operate on 100 acres or on a 1/10th acre garden plot, and make a profit.

Annual rainfall has little relation to the need for irrigation. It is the time the rain comes that counts. In some places good crops are produced on 20 inches of rainfall. In some counties in Western Oregon where the rainfall averages as much as 80 inches per year, summer pasture irrigation pays because the rain all comes in the winter. There is hardly a section of the United States where there is not a dry period, or several of them, during the growing season. In testimony to this fact, there are old, established irrigation systems in the truck growing regions around nearly every city in the eastern states.

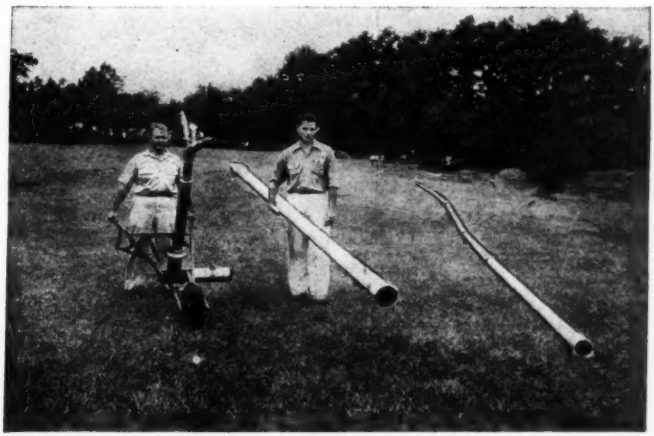
There have also been an increasing number of pastures irrigated. Sprinkler systems have made it possible to irrigate them with only one or two hours' attention per day.

Western Vs Eastern Irrigation

There are some differences between Western (arid) and Eastern (humid) irrigation which should be made clear.

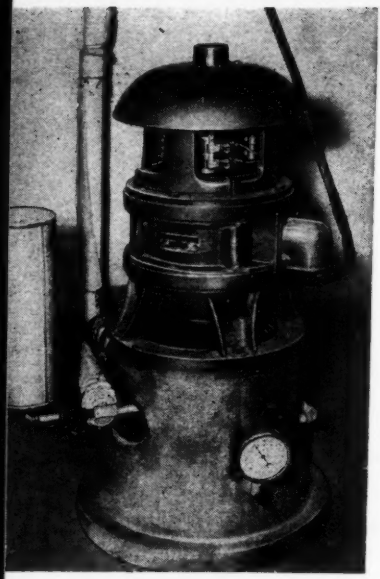
On arid land, irrigation is a necessity. No water—no crop. The cost of getting water on the land may be many times the cost of the land, itself. Arid soils are usually deep and reasonably smooth. Because of this, the surface soil may be moved to level the land without destroying its productiveness. It has been common practice to apply the water to the fields from ditches by flooding or down rills or through furrows between rows. Where the water supply is limited, or where it must be pumped, surface irrigation methods are being replaced by sprinkling. Because sprinkling applies the water more uniformly, less is wasted and there is less erosion of the surface.

A noteworthy difference between western and eastern irrigation is that pumps in the dry western regions are operated almost continuously for four to seven months out of the year. The pumping equipment must be highly efficient to keep down costs. It must be carefully selected to fit the requirements of water table, discharge pressures and quantity. Three phase electric service is available to most farms. It is not uncommon to find several hundred horsepower in pump motors on one farm.



Moving portable aluminum pipe and a large sprinkler head in a Georgia meadow.

Typical of a western irrigated region is the territory of the Pacific Gas and Electric Co in



A 7½ hp deep well, multi-stage turbine pump on the John W. Sanderson farm, Hollins, Va. It delivers 60 gallons per minute from a well 100′ deep for irrigating 10 acres of vegetables.

Central California. Mr. E. G. Stahl, Manager, Agricultural Sales, gives us these figures. Of the 81,000 farms in the area, 60,000 are irrigated and 21,000 dry farmed. P G & E supplies power for pumping to 73 per cent of the irrigated farms; 27 per cent are irrigated by gravity flow. Crops irrigated on these farms are

Crop	Number of Farms
Field crops	18,757
Truck crops	8,030
Fruit and nuts	37,103
Pastures	12,000
Farm gardens	40,000

In the humid, or semi-humid, areas of the country, water is more plentiful. Top soils are usually too thin for leveling. Water has been applied to truck crops chiefly by the Skinner system of irrigation. It consists of lines of ¾″ or 1″ pipe several hundred feet long on supports above the field. The pipes are tapped on the sides and supplied with spray nozzles. By oscillating the pipes the spray covers a width of 30′ to 40′. In recent years portable pipe and rotating sprinklers have been gaining in popularity. A relatively small amount of irrigation is done using perforated pipes or canvas hose laid on the ground. First costs may be lower, but replacement costs and labor are usually higher, and the distribution of water not so good.

First costs of equipment in humid areas are perhaps more important and operating costs less important than in arid regions because the equipment is used a much shorter time during the year. (See power requirements below.)

Benefits of Irrigation

The main purpose of irrigation is to increase yields. Other results, however, may be almost as great. The quality of vegetable and fruit crops is improved by keeping them supplied with moisture so they can grow continuously through the season. Quality means money on the fresh market or at the cannery. Irrigation often prevents complete crop failure due to unexpected periods of drought. That's when prices are highest. Milk flow is maintained when pastures normally fail in dry periods. Irrigation systems have saved crops by raising temperatures just enough on cold nights to prevent frost injury. In the last year or two, irrigation has been saving the cost of applying fertilizer by feeding the fertilizer in liquid form into the irrigation water.

In Aroostook County, Maine, a number of growers report increased yields of potatoes of 40 to 100 barrels per acre. In some cases the crop was doubled over the average of the preceding 4 or 5 years. They used portable pipe and big sprinklers.

Long Island and New Jersey have many overhead pipe and portable pipe sprinkler systems on truck and cannery crops. Some are used for pastures.

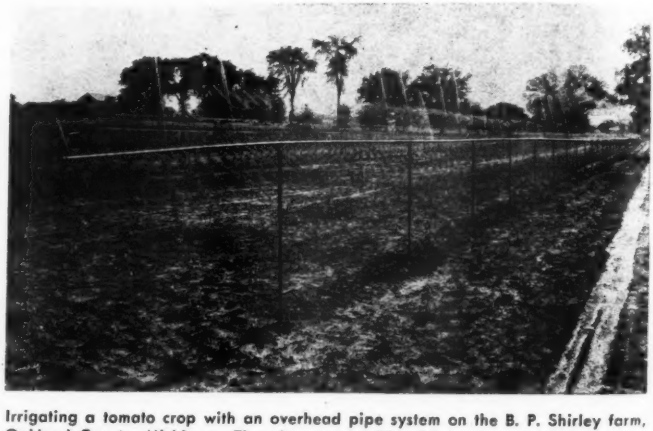
The Georgia Agricultural Extension Service reported 46 cows grazed on six acres of irrigated natural grasses and lespedeza during extreme droughts. The milk production held up and pastures remained good. Twice as many beef cattle were carried per acre during droughts than could be grazed on dry pastures.

The Mummas, prominent fruit growers near Dayton, Ohio have been irrigating berries for 14 years. Last year they irrigated over 100 acres of strawberries and raspberries. One of their pumps is powered by a 150 horsepower motor.

Around St. Louis in the territory of the Union Electric Co, E. J. Gildehaus reports irrigation of truck and fruit crops on 350 farms.

Water Supply

The supply of water is most important in irrigation. There must be enough. It should be near the point of use to keep



Irrigating a tomato crop with an overhead pipe system on the B. P. Shirley farm, Oakland County, Michigan. The pipes are oscillated by water pressure to cover the intervening space between pipe lines. Either reciprocating or centrifugal pumps may be used for such systems.

down pipe and pumping costs. It must contain no harmful chemicals, and be clean enough so it will not clog pipe lines and sprinklers. Streams and natural lakes are excellent. Wells are good, where you are sure there is a plentiful ground water supply at not too great a depth. Artificial ponds made by damming small streams or making excavations in natural drainage basins are used successfully.

It takes a lot of water to grow plants. Nature normally provides about 40″ depth of rain over the land. For supplemental irrigation in the East we may use 4″ to 18″. In arid regions from 20″ to 48″. An acre contains 43,560 square feet, and it takes 3,630 cu ft or 27,200 gallons of water to cover it an inch deep. In terms of flowing water it will take about 450 gallons *per minute* to cover an acre an inch deep in an hour. Or to put a depth of 2″ of water on an acre in a 10 hour day would require about 90 gpm.

Before ordering irrigation pumps you should have your well or stream tested to be sure of the quantity of water available. The well test should continue until the quantity delivered remains constant. The depth to water in the well should be measured while the pump is still running.

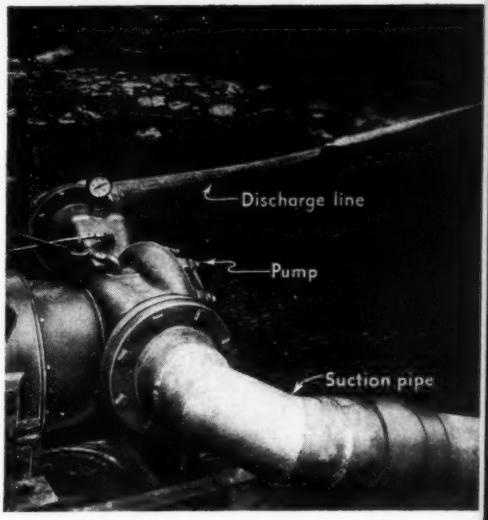
In building ponds it is best to make them quite deep as you will have less surface evaporation. If you wish to store water to put 12″ of irrigation on 5 acres, your pond would need to be an acre in area and an average depth of about 6′ to allow for some seepage and evaporation. You should have from 4 to 15 acres of drainage area to feed the pond for every acre-foot of water to be stored. The number of acres will depend on the slope of the land, its vegetative cover, the type of soil, the rainfall and the tightness of the pond.

For those interested in garden irrigation, a large farm water system delivering a full 500 gphr would irrigate 1/10 acre with 2″ of water in about 12 hours.

Pumps

Centrifugal and turbine pumps are generally used where large quantities of water are pumped for irrigation. Single stage centrifugals should be placed so they will have no more than a 15′ suction lift from the water. They will discharge against heads of 200′ or more. In capacities they range from as little as 20 gpm to any size desired.

Vertical turbine pumps are the deep well irrigation pumps. The pump goes down in the well casing and is connected by a vertical shaft to the motor at the surface. They go into casings of 4″ diameter upwards. Capacities and discharge pressures may be most anything desired. Pumps of this type are made for motors as large as 700 horsepower.



A self-priming single stage centrifugal pump used commonly for irrigation pumping from streams and ponds. It may be moved from place to place to cover different fields.

Submersible turbines have the motor direct connected to the pump. Both pump and motor are lowered into the well, eliminating the long drive shaft.

When farm water systems are to be used for garden irrigation, it is better to have one of the larger capacity units. In order to make the best use of the system, pipe and hose should be large enough so water friction will not cut down the capacity of the pump.

Power Required

The power required for operating an irrigation pump depends on:

1. The lift from the water to the field.
2. The pressure at which the water is delivered to sprinklers, etc.
3. The friction loss through pipes and fittings.
4. The efficiency of the pumping unit.

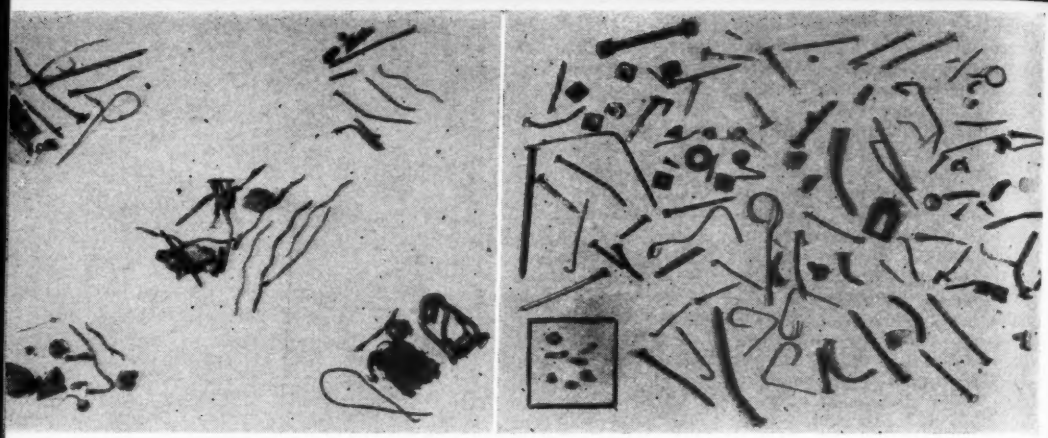
If it takes 2 hp to lift water 30′, it will take 4 hp to lift the same quantity 60′. Pressure in the system adds quickly to the power requirements. Every pound of pressure in the pipe is equivalent to an additional lift of 2.3′. If you pump against 100 pounds pressure, that is the same as adding 230′ to the lift. Friction through pipes is a dead loss. It takes power to force water through small pipes and around bends. For example, forcing 100 gpm through 1000′ of 2″ pipe would create a friction loss equal to lifting the water about 270′; if 3″ pipe were used, the loss would be equal to lifting 40′; with 4″ pipe, only 10′. In selecting pipe sizes, therefore, one must balance the first cost of the pipe against the cost of pumping water through it.

Overall efficiency of pump and piping is not so important from the standpoint of pumping costs in Eastern irrigation as in Western, where the pumps are used many more days per year. Efficiency is important, however, in keeping down motor sizes to those which can be used on single phase lines. Motor, pump and pipe sizes may also be kept down by irrigating 24 hours per day instead of 8 or 12 hours, during those periods when water is needed.

Pipe and Sprinklers

Portable aluminum pipe and quick couplings are becoming very popular for new irrigation

. . . . . (More on page 34)



Left: These pieces of metal were taken from the stomach of five cull cows that were butchered. **Right:** Junk removed from feed concentrates by the magnet in the hammermill feed table. It did not come out of hay, but out of grain, and mill feed.

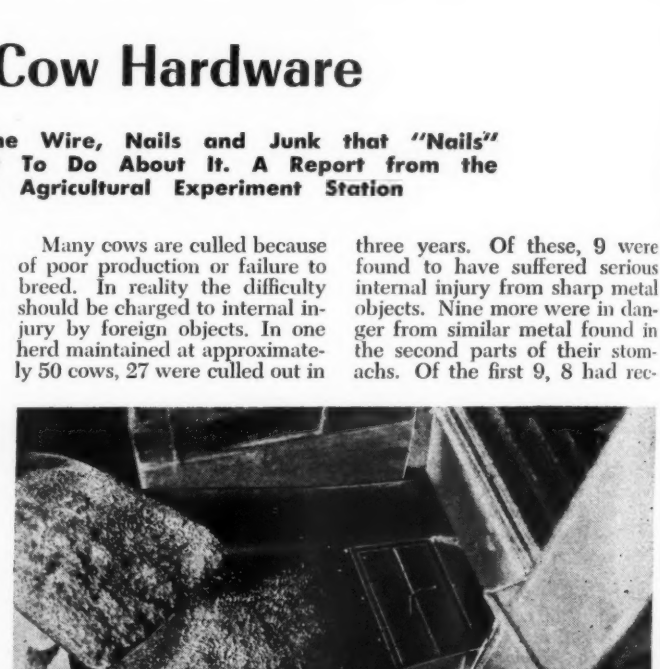
Cow Hardware

Some of the Wire, Nails and Junk that "Nails" Cows. What To Do About It. A Report from the Ohio Agricultural Experiment Station

If a cow dies suddenly without apparent cause, it may be "hardware disease". Or if she goes off-feed, loses weight, drops seriously in production, aborts her calf, or fails to conceive, it may be the haywire and nails in her "innards." In effect, that is what Dr. W. D. Pounden of the Ohio Agricultural Experiment Station, Wooster, O., has to say about it.

He has more to say. These destroyers of cows work undercover, in the dark. They are no respecters of pedigrees or high priced animals. The demons that do the dirty work are just sharp pieces of metal which penetrate the walls of the second compartment of the cows' stomachs. One of the arteries of the stomach is occasionally pierced and the cow bleeds to death. Because the cow gives little indication of the real trouble, little is done to curb this hardware destructiveness.

Many cows are culled because of poor production or failure to breed. In reality the difficulty should be charged to internal injury by foreign objects. In one herd maintained at approximately 50 cows, 27 were culled out in three years. Of these, 9 were found to have suffered serious internal injury from sharp metal objects. Nine more were in danger from similar metal found in the second parts of their stomachs. Of the first 9, 8 had rec-



Permanent magnet set in feed chute of hammer mill caught 0.53 pounds of iron and steel junk in 8 months.

ords of faulty breeding. In some cases the metal objects had disintegrated but abscesses and adhesions caused by them were still present.

What can be done about this hardware affliction? As with fire and accidents, prevention is much more effective than any cure. As with accidents and fire, *carelessness* is basically the cause. You drop nails when repairing the barn floor or stalls, you are careless with baling wire in hay, pieces of wire break off brittle old fences, the rake, baler or field chopper picks up pieces of metal in the field, bits of metal get into your feed sacks or bins. Correct this carelessness and you will prevent much of the trouble.

Magnet to the Rescue

Mr. C. E. Knoop of the Ohio Station Dairy Staff installed a large permanent magnet in the Station hammermill feed table. The mill is used to grind feed for 130 head of cows. In an 8 month period (fall and winter) the magnet collected 0.53 pounds of metal shown in the accompanying picture. Metal gets into the grain and mill-feed supply through storage bins, on barn floors and during transportation in trucks and freight cars. Pasture, hay and silage are also easily contaminated with wire, staples, nails and other bits of metal. Repairing the barn roof or siding may result in nails in the hay. It is also bad practice to build gates or do repair work on the barn floor where feed is handled.

If there is any likelihood of metal in the feed, strong magnets in the feed chute or conveyor will hold the iron and steel. Catching it before it goes into the feed grinder may also save damage to the grinder. Either permanent magnets or electro-magnets may be used. Powerful permanent magnets are now available. They come in flat shapes to fit into feed chutes and also as magnetized pulleys for use with belt conveyors. The metal is dropped from the belt into a collector as soon as it leaves the pulley. No wiring is necessary for such magnets.

Winter Ventilation for Cows and Hens

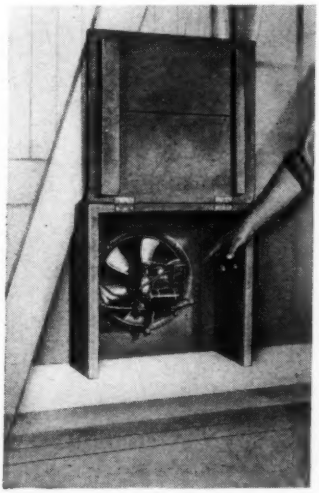
Observations and Facts by Two Well Known Agricultural Engineers

This is one of the months when the need for ventilation of farm buildings is most appreciated. Right now, when you are inhaling the foul air in dripping and decaying buildings, is the time to plan what you are going to do. Something can be done. We are learning more each year. EDITOR

Cows and Barns

By **PROF. HERBERT STAPLETON**
University of Massachusetts

The cow is a furnace of fair proportions. A 1,000 pound animal will produce about 3,000 heat units per hour. But the cow's stoker blows air to keep up this fire without you having her connected to a smokestack. Just as when you run an automobile or tractor engine in a closed garage, the air soon gets foul. The cow, like the truck or tractor, breathes water and carbon dioxide out of her exhaust pipe. In 24 hours the water vapor has amounted to at least 11 pounds for each cow—5½ quarts. If there is no ventilation system to carry off this moisture, or if the barn walls are so thin that they are cold, things are soon going to be all wet. Warm walls, and a fan of proper size for the number of cattle are the combination that will remove this water from the stable. When sufficient ventilation is provided to remove the moisture, there is adequate air movement to maintain air purity and to remove objectionable odors.

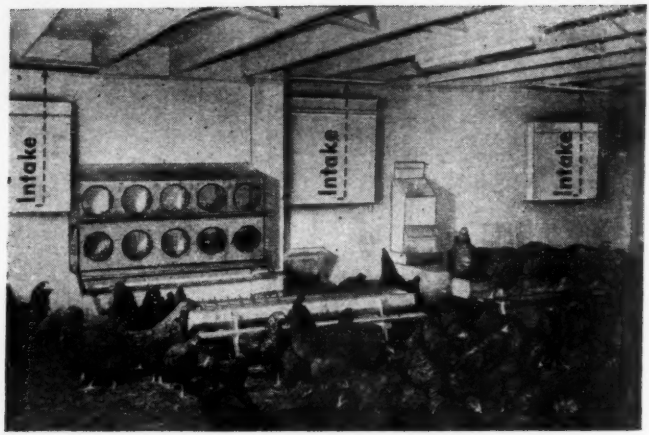


A barn exhaust fan on a New York farm. It is equipped with a capacitor motor. This view is inside the barn. The hinged cover is normally down except for cleaning or oiling the fan. The air is taken into the box flue about 15" from the floor.

Your cows breathe all of the time. Therefore, the fan which does the ventilating should run all of the time. There must be some control of the amount of ventilating air. This control becomes automatic when a thermostat switches the fan from slow to fast, and better control of moisture is obtained than with on-off fan operation. There really is little logic in buying a fan to provide ventilation and then buying a thermostat or humidistat which shuts the fan off so that you will have no ventilation.

If your barn has masonry walls which are so tight that there will be no air infiltration, you should provide intakes. With fan ventilation, these are best placed in the wall opposite the fan. This will prevent short-circuiting by drawing outside air from intakes through the fan without circulating it in the barn. Infiltration through the small cracks in the building may provide good distribution of the fresh air. This does not eliminate the need for warm walls, and in exposed locations, storm sash, if condensation is to be prevented.

Difficulties which develop in attempting to provide good barn



This view shows three intakes in the Milan Tucker house near Auburn, N. Y. This is a multi-story, windowless, fan-ventilated house. The inlet ducts are 3" x 20". Air is taken from the outside at the bottom of the duct (broken line) and discharged against a baffle on the ceiling. System has been in use 5 years. All light in the building is from lamps.

ventilation usually trace to a very few things. If the walls are too cold, moisture is condensed before it can be removed in the ventilating air. If too many intakes are provided, short-circuiting occurs so that uniform air movement cannot carry the moisture from all parts of the stable. If the stable is not filled with stock, uneven conditions exist just as if you tried to heat the space with an old potbellied stove. You can compensate for some of these deficiencies with flexibility in the control of the fan. The system will function as it should only when the available heat and the amount of ventilating air are in proper balance.

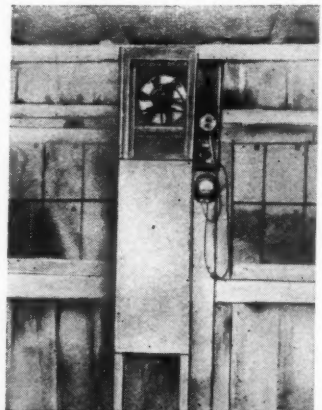
Fresh Air for Hens

By **PROF. C. N. TURNER**

New York State College of Agriculture

Why do poultrymen take pullets away from fresh air on the open range and crowd them into a stuffy building without adequate ventilation? The old trick of regulating windows, curtains and slot gadgets according to the whims of the poultrymen is never consistent. Furthermore, the weather changes very suddenly some nights.

A ventilation system where the windows are closed and the electric fan started in November and run continuously until the following March has been operated successfully now for about five years at the poultry research farm at Cornell University. The results have been most encouraging. The temperatures in the pens seem to have been entirely satisfactory. There has been no frost or moisture on the walls or ceiling, and the floor litter has not been changed during the winter season. Some dampness occurred around the watering troughs but a new water system should help solve this problem.



A 12" fan running continuously and removing 2½ cu ft of air per minute per bird from a Cornell poultry house. The fan has ball bearings; it cannot be overloaded. It is of rugged construction and made for ventilation work.

The most important advantage of the electric fan is a more consistent and dependable job of removing the stale, damp air.

Fan motors used for poultry houses must be capable of standing punishment. The continuous duty, 24 hours a day for about five straight months, with dirt, moisture and ammonia gases, requires a special type of motor. Cheap, shaded-pole motors often used on some small fans have not been able to take it. Most of the newer totally enclosed split phase or capacitor motors which are built for fan duty seem to be standing up very well. The units we put in the old barn at the research farm have never been serviced since they were installed 5 years ago. We have some others out on poultry farms which have been used every season for 8 years and are still in excellent mechanical condition.

Here is why the litter gets wet in so many of our laying houses. One hundred birds breathe out about 250 pounds of air containing 45 pounds, or 5½ gallons of water every day. This would be a lot of water spilled on the litter if it wasn't removed. This moisture and that contained in the droppings of the flock tends to collect on top of the floor litter. Once it gets into the litter, it is very difficult to get it out again. This is the reason the continuously operated fan is better than other human controlled systems.

There are other advantages of the fan system. By removing the moisture continuously we can prevent it from condensing on the walls and ceiling and causing decay and warping of the building materials. A deep built-up litter should not have to be changed throughout the year.

Cornell Extension Bulletin No. 315 has been revised and now includes a section which describes and illustrates the important features necessary for

installing the fan system. Many poultrymen say they cannot afford to be without their ventilation systems and they pay for themselves within two or three years.

Another way of putting it is this. We carry or pipe about 500 pounds of water per day into a house for 1000 laying hens. We carry about 50 pounds out in the eggs. The remainder has to be taken out by ventilation or in wet litter.

Of the major expense items of electric utilities in 1949, $870 millions were spent for wages and salaries, a jump of $50 millions; taxes were $820 millions, an increase of $100 millions; and, fuel cost $710 millions, a drop of $68 millions.

The electric industry installed 6,750,000 kilowatts of generating capacity (nearly a billion horsepower) during 1949. Of this, 80.4 per cent was installed by utility companies, 8.3 per cent by local government agencies, and 11.3 per cent by the Federal government.

Elmer Latt, 49, veteran sheep shearer from Rockford, Illinois, took top honors in the Professional Sheep Shearing contest at the International Livestock Exposition. The husky, six-footer outscored two Wisconsin men, Melvin Walker of Dalton, and Henry Henning, Jr., of Burlington. Thirty experts competed for prizes offered by Sunbeam Corporation. Latts' speed, technique and quality of workmanship gave him a point total of 95.3. His fastest time was 1 minute and 23 seconds.

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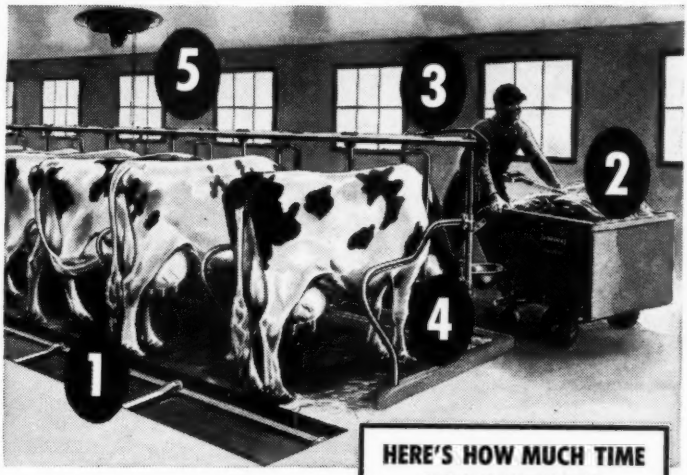

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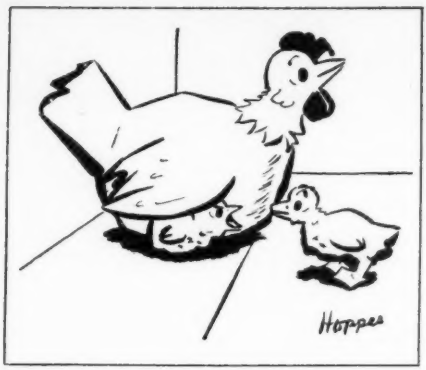
HEAT for Your Early Chicks

By **ELIZABETH WAGNER**
Cedar Glen Poultry Farm,
Rifton, New York



Don't brag about your electric brooder to me. I may have lice and wet feet, but my mom can scratch.

What are early chicks? I belong to the good old days, ("who wants 'em back?") when April firsts were early chicks and March thirty-firsts extra early. In those days the alarm rang at 5 a.m., so that you got all the coal brooder stoves shaken down and the room warm to feed the chicks at 6 a.m. After years of that we graduated to oil brooders. They surely heated under the stove and the whole room besides. How often we went out about 9 p.m., found the chicks all right. But haven't you often wished those old oil burners wouldn't roar so much—(ugh!)—when they were calling for so much oil to heat under the stove and the room besides, because they have no way of confining the heat just for the chicks.

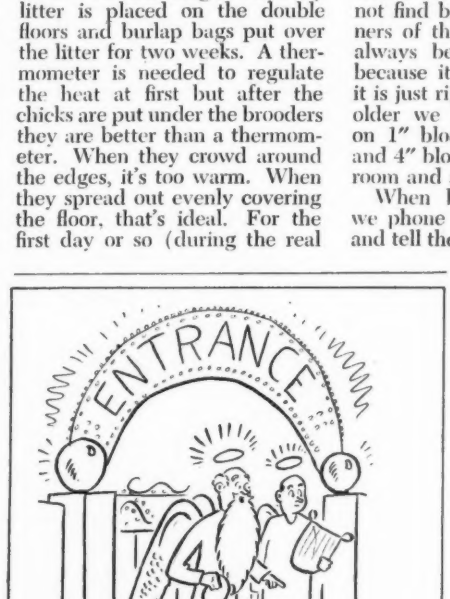
One spring our last batch of chicks was too large for two brooder stoves and we had a brooder compartment which did not have a chimney, so we could not use an oil brooder. A phone call located Mr. Hallock of our electric company and he did some phoning and by 2 p.m. we had our first electric brooder. It worked good on this batch of chicks; the weather was mild and the chicks thrived.

The next spring we had an early hatch and put some chicks under the electric brooder and an equal number under the oil brooder. At four weeks of age there was a noticeable difference in the chicks. The electric chicks were slick; tight feathered; and a bit heavier than the others which were loose feathered.

We now put the heat on our early chicks as early as February 4th; (that's cold weather). We use only electric brooders with no auxiliary heat in the buildings. Stays-dry litter is placed on the double floors and burlap bags put over the litter for two weeks. A thermometer is needed to regulate the heat at first but after the chicks are put under the brooders they are better than a thermometer. When they crowd around the edges, it's too warm. When they spread out evenly covering the floor, that's ideal. For the first day or so (during the real cold weather) put the feed hoppers under the brooder; also a water fountain. When you have the water outside of the brooder you have to change it often; two hours in early morning will see a sheet of ice forming; high time to warm the water.

An important point to remember in electric brooding is that home is where the heat is, not where the heart is. You should not find baby chicks in the corners of the room. They should always be under the brooder, because it is not too hot there, it is just right. As the chicks get older we raise the brooder up on 1" blocks first, then 2", 3" and 4" blocks to give more head room and air.

When brooding time comes we phone the electric company and tell them we are starting our brooding and need continuous electric service. They put us on a special list, and if wind or ice storms interfere with the power lines they send help out our way at once. They are always on the job even when we sleep.



"Here comes old 'Nuts to Safety Rules!' "

What about the electric brooders with forced air ventilation? Unlike other brooders most of the modern electric ones have fans which not only keep the litter dry but provide the chicks with a continuous supply of clean fresh air.

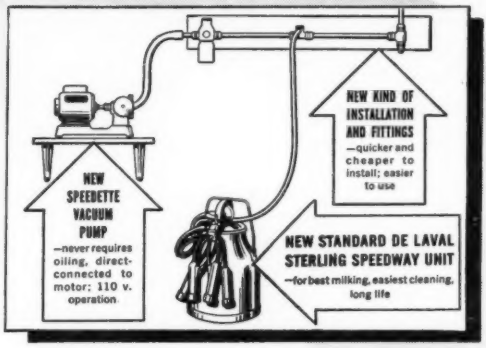
Cannibalism? That word does not belong to electric

. . . (More on page 27)

°From a broadcast over radio station WGY, Schenectady, N. Y.

Don't forget folksies, THESE trying times are the GOOD OLD DAYS we'll be pining for a few years from now . . . . When the teacher asked "What is a PRIME MINISTER?" little Rollo replied: "A PRIME MINISTER is a preacher at his best." . . . . RABBIT: HARE today and MINK tomorrow . . . . NOT-SO-DUMBBELL DEFINITION: WASHINGTON: that which had its face on all our money but which now has its hands on . . . . Some "PRINTERS LITTLE ERRORS" quoted in Mag. Digest . . . Dateline on a United Nations dispatch: "Lack Success, N. Y. Oct. 14." . . . Wanted: Neat, efficient maid, to live on promises . . . . OVERHEARD: "That man who made the Lifesaver, he made a mint." . . . . A man at the end of his rope often starts a fresh cigar . . . . PROSPERITY: that which goes to the HEADS of some people and to the WAISTS of others . . . . SNORING: a pleasure that is ALL yours . . . . Children surely brighten up a home—they NEVER turn off the lights . . . . NIGHT-CLUB BOUNCER—a fellow just as common as an old shoo . . . . OPTIMIST—a fellow who laughs to forget. PESSIMIST—a fellow who forgets to laugh . . . . EVERSTOPTOTHINK?—It's NOT the number of persons per square mile that counts—it's the number of square persons per mile . . . . How about this?—can YOU think of any BETTER names for the following?—Joke Benny, Funny Brice, Hombre Bogart, Mae Waist, Crazy Allen, Moutha Raye—and don't forget Harried Truman. (Credited to Buster Rothman) . . . . Conversation between two wimmin USUALLY concerns: WHO, HOW, WHY, WHEN, WEAR . . . . NIGHTCLUB: a place where they have what it takes to take what you have . . . . BARTENDER: a fizzical culturist . . . . Women are like money—keep them busy or they lose interest . . . . And now, from STEPPING STONES comes the SNICKERSCOOP-OF-THE-MONTH: When the teacher inquired of her class the cause of the Revolutionary War, little Jimmie volunteered: "It Had SOMETHING to do with AUTOMOBILES." "Oh, no, Jimmie!" protested the astonished teacher; "THAT was in the days BEFORE the automobile." "Well," rebounded Jimmie, "they SAID it was on account of unjust TAXIS."—Your pun-peddler—DUFFY.

IF YOU MILK 10 COWS OR LESS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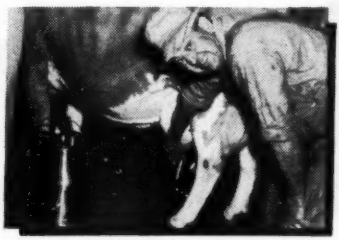
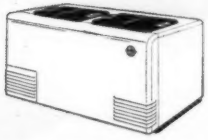
FASTER MILKING

Henry Finke, Jr., Navasota, Texas, reports that with his new De Laval Speedette he milks 11 cows in 40 minutes. His wife and he, milking by hand, formerly required one hour and 30 minutes. Cows "took" to the Speedette at once.



"COWS MILK OUT FASTER"

Ira J. Savage, Langhorne, Pa., says: "Several of my heavy producing cows were slow with hand milking and now milk out much faster with my De Laval Speedette. It's a great time and labor saver for the smaller dairyman."



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Some Things You Should Know About

Heat Lamps

Uses, Kinds, Types, Sizes. Incandescent Lamps as Infrared Lamps. Instantaneous Heat. Safety Precautions.

Lamps for providing heat are finding an increasing use on farms. Just to be sure we know the uses I am talking about, I am going to list some of them.

Heaters in hover type chick brooders.

Supplemental heaters over feed hoppers in brooder houses.

Pig brooders, both hover and open type.

Sow preparers (before farrowing).

Lamb brooders.

Treating inflamed udders and sore muscles.

Milkhouse heaters (single lamps and in groups on a frame).

To keep pumps and pumphouses from freezing.

As heaters in some types of poultry and pig waterers.

For thawing frozen pipes.

To warm car and tractor engines.

Pain relievers for humans.

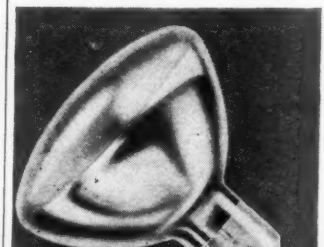
Drying the ladies' nail polish.

Practically all of the heat lamps used on farms fit into ordinary medium base sockets. They operate on 115 (110 to 125) volt circuits.

Lamps of several different types provide heat. They may be known as heat lamps, drying lamps or infrared lamps. Incandescent lamps used commonly for lighting are also good heat lamps. When operated at their rated voltage, 64 to 87 per cent of the energy that goes into them comes out as infrared. The remaining light rays are also changed into sensible heat when they strike some object.

There is nothing mysterious about infrared heat. It is produced by invisible rays just below red heat. The sun, fire, radiant heaters, heat lamps and incandescent lamps all produce infrared rays. Most of these sources also produce rays in the visible range.

Heat and drying lamps are similar to lamps for lighting. The difference is that the heat lamp filament is designed with greater electrical resistance and gets only red hot instead of white hot. Be-



Above: This is the common R-40, 250 watt, infrared or heat lamp. It is 5" across and fits in an ordinary lamp socket. The end of the lamp is diffusing glass. The bowl part is coated on the inside with reflecting metal. Price for inside use $1.10. If the lamp is to be used where there is water dripping or splashing, a special red heat resistant glass lamp should be used. It looks the same and is the same size. Price $2.95.

Below: This is a PAR-38 hard glass, 150 watt reflector flood lamp. It is intended for outside use. A companion lamp with a narrower beam is used for spot lighting. Both have inside reflectors and clear glass lenses. They are sometimes used as heat lamps. Price $1.55.

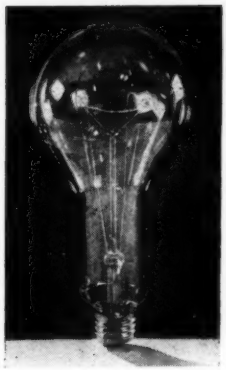
cause of this lower heat, the heat lamp has a longer life than the incandescent lamp—about 5000 hours against 1000 hours.

Using 125 volt lamps on 110 volt circuits results in less light, a slightly higher *percentage* of heat, and longer lamp life. The wattage, however, is reduced, and therefore the total heat produced per lamp is less. The radiant heat per watt input is about the same.

Types of Heat Lamps

Different types of heat lamps have been mentioned. They come in different glass bulbs. Ordinary heat lamps look like lamps for lighting, except that they usually have clear glass bulbs. You will not find these lamps stocked in many electrical stores. They are used mostly for industrial purposes.

Reflector lamps are generally stocked. The R-40, 250 watt heat lamp may be bought most anyplace where lamps are sold. Reflector lamps are scientifically designed with the reflectors coated on the inside of the glass bulb. *For lighting*, they come with narrow or wide beams and in blown and hard glass. The hard glass is for outside use and is resistant to breakage by water. Wattages available and prices are, blown glass: 75w, R-30, $1.25; 150w, R-40, $1.05; 300w, R-40, $1.55. Hard glass: 150w, PAR-38, $1.55.



This is an ordinary heat or drying lamp such as is used in factories. It comes in a number of sizes; has a clear glass bulb. It is built similar to an incandescent lamp but operates at red heat instead of white heat.

Reflector *heat and drying lamps* are also made of regular glass and water-resistant glass. The water-resistant types are colored red. Regular 250w, R-40, $1.10. Red, 250w, R-40, $2.95.

In the designation R-40 or R-30, the R means reflector type; the number is the number of ⅛ inches across the lamp. An R-40 is 40/8 or 5 inches across; an R-30 is 30/8 or 3¾ inches across.

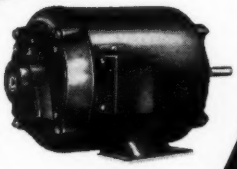
Copper or aluminum makes good reflectors for heat lamps not having built-in reflectors.

Wiring should be checked to be sure it is large enough for the heat lamps added. If wires are too small, some of the heating will take place in the wires instead of the lamps where you want it.

The same safety precautions must be used with heat lamps as with incandescent lamps. Be sure they are fastened up well so they cannot fall or be knocked into the litter. If covered up with litter, lamps can set fire. Do not wrap extension cords around nails, pipes, etc, that might cause short circuits. Be careful about

. . . More on page 33

Century Electric Motor Power Helps Make Farm Life Easier



Type RS—Repulsion start induction, single phase, brush lifting motor — for applications requiring high starting torque with low starting current. Built in sizes ½ to 20 horsepower.

Type CSH — Capacitor start induction, single phase motor — for high starting torque with normal starting current. Built in sizes from ⅛ to 20 horsepower.

Type SP—Split phase induction single phase motor — for light starting duty. Built in ⅛, ¼, ⅓ horsepower sizes.

CE-661

Hundreds of thousands of Century single phase motors are helping farm families do more work in less time with less human energy. Then, too, electrically powered equipment usually does the job better.

Century motor powered equipment—keeps water ready at the faucet, in the house, barn and feed lot; pumps milk; shells grain; turns tool grinders and workshop machines; operates hay and grain dryers; and takes the hard labor out of dozens of other farm jobs.

For dependable electric motor power insist on Century motors —on new equipment and for replacement. Century motors are available single phase, three phase and direct current up to 400 horsepower.

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Century C MOTORS

Cobs Great for Litter

"Good family of pigs". Yes, but it's the litter we want to tell you about.

These pigs are on the farm of Russel McAllister of Waterman, Ill. The litter is ground corn cobs. The grinding is done through a 1" screen in the hammer mill. This is the first year Mr. McAllister has used cobs. From here on, he says, he will not use anything else. Here are some of the advantages he finds in ground cobs over straw:

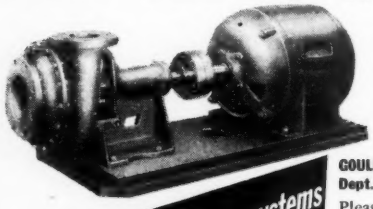
1. Pigs don't get covered up and get laid on by the sow. The pigs can get out of the way faster.
2. It is easy to clean out the pens —just shovel it out.
3. The litter remained dry for the 7 to 10 days the sow and pigs were under the brooder. This was never possible with straw.

Perfect for Irrigation

Farmers everywhere are saying "Goulds new Irrigation Pump is ideal for dependable, profitable irrigation." Here's why it's the best buy for *your* farm:—

1. It's specially designed to deliver *lots* of water, and to use only a little electricity.
2. It's built for heavy duty service . . . to stand up under extra years of hard usage.
3. Its cost is surprisingly low.

GOULDS Fig. 3169 Irrigation Pump



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Why Use No. 14 Wire?

In our May issue the question was asked, "Why is No. 14 wire so generally advertised when there are so few places where it can be safely used?" The answer cited the Code requirements, objections of wiremen to stiffer wire and the tendency of owners to want to get their wiring done at low cost. We also called attention to the rapid addition of load so that many No. 14 wiring jobs were badly overloaded. The answer ended with the statement "Correction lies in more circuits rather than larger wires." Two of our good reader friends have objected to that statement.

Dr. S. G. Hibben of Westinghouse comments, "While more circuits are unquestionably advantageous, it is equally important, especially for convenience outlets, to use conductor larger than No. 14. Most city codes do not permit more than 12 to 15 amperes on No. 14, yet small motors, electric irons, portable electric heaters and other appliances take upward of 1200 watts."

D. E. Washburn of United Co-Operatives says, "I think you would agree the correction lies in both more circuits and larger wires."

We agree with both for new houses and complete rewiring jobs. To relieve extension-corditis and bad situations in overloaded houses, additional circuits might suffice. The trouble is not with the No. 14 wire as originally installed. It was probably adequate for what it was intended. The trouble is with us. We have kept on adding appliances by means of extension cords and 2, 4 or 8 way multiple, 10c store outlets until our circuits have become overloaded. If the family grows, we buy more dishes and more food. But

if the family of appliances and lamps grows, we try to starve them along on the same old rations. And something blows or burns.

There would undoubtedly be some arguing over whether No. 14 wire should ever be used on farms. If the editor ever builds a new house, it will probably be wired with No. 12 throughout, except where larger wires for special circuits are indicated. We do much of our lighting these days with portable lamps attached to convenience outlets. These outlets should be wired with No. 12 wire. We estimate, however, that 95 percent of the new houses being built are wired with No. 14 wire. In view of past experience, it is probably a mistake.

Other comments will be welcome.

Soil Heating Cable Saves Silo

It can get pretty cold in Vermont during the winter. Cold enough so that silage frequently freezes to the walls of the silos. This leads to the use of picks, axes, and other similar implements for the removal of silage. This is bad for the tools, for the silo, and for the temper. It can also be dangerous. An accidental cut disabled at least one farmer and he bled to death before he was discovered in the silo.

Joseph Kivlin of Shoreham, Vt. has a 40 ft cement silo, 20 ft in diameter. To take care of the problem of frozen ensilage, he uses a 60 ft length of lead covered soil heating cable. This is placed next to the silo wall, covering one-quarter at a time. The cable is doubled back on itself twice making four strands.

After pitching down a feeding (a pie-shaped area covering a quarter of the silo) the cable is placed in the next quarter. Several forkfuls of ensilage are thrown over it. An electric cord runs down to a convenience outlet. In cold weather, when the temperature is below 10 degrees, the cord is plugged in about a half-hour before going up into the silo. This method has entirely eliminated the use of anything but a fork in the silo. It has also saved breaking a few fork-tines.

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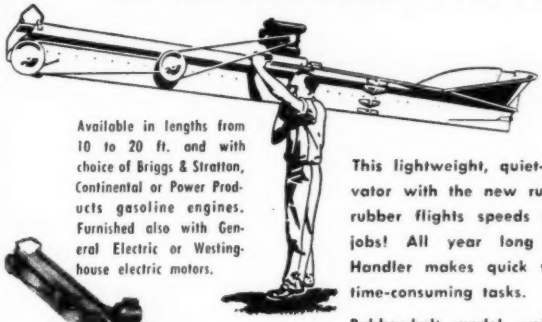

Available in lengths from 10 to 20 ft. and with choice of Briggs & Stratton, Continental or Power Products gasoline engines. Furnished also with General Electric or Westinghouse electric motors.

This lightweight, quiet-operating elevator with the new rubber belt and rubber flights speeds your handling jobs! All year long the Harvest-Handler makes quick work of those time-consuming tasks.

Rubber-belt model weighs 116 lbs. with 2 HP gasoline engine. Aircraft aluminum-alloy construction combines light weight with strength and durability. Special features keep trough clean and belt running free when handling poultry litter and droppings.

Capacities at a 35° angle in bushels per hour: Ear corn, 340; wheat and soybeans, 450; shelled corn, 475; oats, 640. See your local dealer or write for free folder.

Smaller capacity Model "B" also available.

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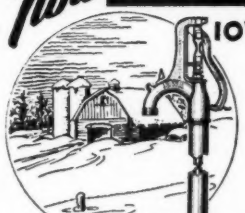

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Easy to install on ANY farm water system. Ask your local dealer NOW or write today for free circular.

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Electrical Housekeeping

Edited by NAN SHAW, 329 Memorial Union, Ames, Iowa

Breakfast Time Savers

These are more of the good letters from our August-September letter subject: "How Electricity Saves Me Time and Steps in Getting Breakfast. Ed.

Substitute for Full Time Housekeeper

By **MRS. TONY BRECKA**
R. 4, Baraboo, Wis.

Electric appliances have saved me time and steps in breakfast preparation for enough years, almost to make me take their help for granted. For that reason, I want to tell you how they helped my young niece, Lois, aged 13, get breakfast for her family while her mother was at the hospital with a new baby brother. The family included dad, grandpa, two brothers and two small sisters.

Lois is lucky to be a modern girl. Just a few weeks before her mother went to the hospital, a new electric range was installed in their kitchen. She has quick clean heat right at her fingertips. The mother, too, had peace of mind in the hospital, with no need to worry over the possibility of overheated chimneys or kerosene explosions in the rush to get breakfast for the busy menfolks.

Of course, the range doesn't deserve all the credit. But it did provide boiling water for the coffee maker, crisped the bacon, and simmered the wheat cereal. Lois juiced oranges with the juicer attachment of the electric mixer, and then with the mixer beat the eggs for scrambling. Ten-year old Janis, besides keeping a watchful eye on 2-year-old Patsy, and setting the table, operated the toaster—a good-sized one—four pieces done at once! Waffles, served on alternate days in place of hot cereal were no problem at all with a waffle ready-mix and mother's electric waffle maker.

I really believe the electric equipment substituted for an extra full-time housekeeper.

Mother's Best Helpers

By **VERNE WEIHER**
R. 1, Antigo, Wis.

The electric range is mother's biggest help and timesaver. There is no big black monster to light and feed wood to constantly. (I also like this feature. Being her only son I had the job of carrying in wood and cleaning out ashes and carrying them away.) This old range didn't provide the even heat our new electric does, and it kept the kitchen too warm for comfort. Mother says she can sleep 15-20 minutes longer each morning because all she has to do is turn a switch for fast, clean heat.

The refrigerator is next on our list of biggest helpers. It keeps

Above: This is Mr. and Mrs. Brecka of Baraboo, Wis., and their family. Electric appliances have saved them time and steps for so long that they take them for granted. **Right:** Lois is 13. She took over the meal preparation while her mother was in the hospital. Note the electric refrigerator, the new range, the mixer, lights, running water and Lois' smile.

milk, butter, cream, eggs, and bacon fresh. No one can explain how good fruit juices, fruits, and milk are when cold unless they have eaten them for years when they were warm.

Crisp, even toast was unknown to us before our purchase of an automatic toaster. Now mother doesn't even have to watch the toast. We are sure of perfect toast every time.

If waffles are on the menu, the electric mixer does the hard work in a fraction of the time mother could do it. The waffle baker turns out golden brown tempting waffles without fail.

We also have an automatic-egg cooker. The length of cooking time depends on the amount of water put in. It cooks the eggs to perfection and shuts off automatically.

The electric coffee maker is used at every meal, not just at breakfast.

Music, supplied by the portable radio in the kitchen, cheers up the family and puts them in a gay mood for breakfast.

Preparation is only half the story. After breakfast hot water, supplied by our electric pump and water heater, is mother's best helper.

We hope that it won't be long before we have a garbage disposal unit and a dishwasher to lighten the after breakfast work even more.

Now I Walk Only A Few Steps

By **MRS. CLARK BEAGLE**
R 6, Oskaloosa, Ia.

I have done my cooking the hard way in a kitchen which required many steps. We used a coal range or an oil stove. This required carrying fuel from the basement and waiting until the fire was hot enough to start breakfast. Now I turn a switch on my electric range and in a few minutes water is hot for coffee and the bacon and eggs cooked while coffee is dripping.

In summer I kept the butter, eggs and lard in the basement. This meant a trip the length of the kitchen into the next room, closing a door so I could open the door leading down several steps and then retracing steps to work table and coal range.

The night milk was set in cold water at the pump. To get milk and water for breakfast meant going across the kitchen thru a long porch to the pump.

This summer we bought an electric refrigerator. It stands near the table where we eat and near the electric range and work cabinet. I walk only a few steps.

I also use an electric toaster which sets on the table. We have hot toast and I do not have to jump up to make more or have some left over as was the case when I used a coal range.

It's wonderful to prepare breakfast with firm butter and good cold sweet milk and fresh eggs on quick clean heat without doing a walking marathon.

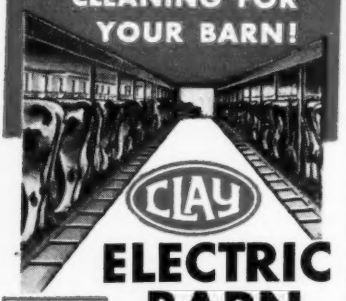
Low Priced Portable Dishwasher

A new lower-priced electric dishwasher is now on the market for renters as well as home owners. It is a portable machine for about $80 less than comparable plumbed-in models.

This new appliance does not require permanent plumbing or electrical connections. That means a further saving of installation costs.

All you need to do to use the

NOW POSITIVE, FOOLPROOF AUTOMATIC CLEANING FOR YOUR BARN!



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dishwasher is connect the rubber inlet hose to the hot water faucet and plug in the electric cord. The drain hose is attached to the inlet hose and automatically centers over the sink when the inlet is attached. When not in use, the dishwasher rolls easily into an out-of-the-way corner.

This appliance brings the advantages of mechanical dishwashing to farm people whose kitchens and budgets prevent the installation of the permanently installed dishwasher models.

The portable dishwasher is manually controlled and does exactly the same dishwashing job as the fully automatic machine and has the same capacity. It greatly simplifies and speeds up dishwashing, and makes for greater sanitation in the home. The new dishwasher holds up to 100 pieces of china, glassware, silver, pots and pans. Washing is done by streams of hot detergent solution sprayed on all surfaces of the dishes by a high-speed impeller.

To operate the dishwasher, you simply load the wire racks with the soiled tableware, pour detergent into a built-in automatic dispenser, and turn on the electricity and hot water. The washing cycle includes a 5-minute wash and two short rinses. When the process is completed, you raise the lid to allow the dishes to dry.

Less than 5 gallons of hot water are used in the entire cycle.

The dishwasher is round and measures 36 inches high and 23½ inches in diameter. The tub is finished in acid-resistant white porcelain enamel; the skirt and top-opening lid, in baked-on enamel. Casters are rubber-tired and ball-bearing mounted to permit easy movement.

All trays are made of stainless steel and can be removed. A universal faucet adapter permits connection of the water inlet hose to almost any faucet.

New Ranges. New 1950 ranges are offering top-of-range controlled units with faster cooking starts. More models are on the market, too, with a well cooker that can be raised up to give a fourth top-of-the-range cooking unit. Ranges with push-button controls make it possible for you to select any desired cooking speed without going through several switch positions. The controls light up in color to show which unit is on and at what speed. This is particularly helpful to your junior cooks who are learning to get meals on time with everything done to a turn.

Refrigerator Saves Me Steps

By **MILDRED CAPLINGER**
Criders, Virginia

The house we live in has a basement with only an outside entrance. Food, such as milk, butter, and cheese, was stored in the basement during warm weather. I had to go down a flight of porch steps and then on down into the cellar to get it.

The cellar was used to store eggs for hatching as we run a poultry farm. When packing and grading eggs on a large scale, the cellar has a tendency to become littered with chicken feathers. As I am rather particular about my food I couldn't seem to relish cellar stored food.

I was as proud as could be the day we received our electric refrigerator. Now that we have had it for a year, I am more than pleased with it. There is no problem in what to do with milk, butter, and leftovers.

Since we don't live near a place where ice cream is sold, we are glad we can make our own in the refrigerator.

In the days before we owned our refrigerator, I could only cook for one meal at a time. Now I save time in meal preparation by cooking in quantities. Meals can be planned and cooked ahead and stored in the refrigerator.

Best Place for Ironing Outlet

The location of the outlet where the electric iron cord plugs in may seem an unimportant detail to the man who wires the house. But to you who do the ironing, a convenient location for this outlet saves you time and effort and makes for a better ironing job, studies at the Oregon Experiment Station indicate. For efficient work the cord should not drag or catch on the board, hamper the movements of the worker or pull across and thus wrinkle clothes being ironed.

The best place for the outlet is above and to the front of the ironer, the tests of hand ironing showed. The best height is 36 inches or more up from the floor. The most convenient position is on a wall faced by the worker; next best, on a wall to the right side for a right-handed worker. The least convenient location is on the wall back of the worker. An overhead outlet also makes for convenient ironing if it is within easy reach. But the specialists caution against using an ordinary light fixture on a drop cord for an iron. The wire for a light fixture does not carry enough current for an iron, thus does not give proper heat and is likely to cause overheating of the wire. The lamp socket is also inadequate for such use.

The length of the cord also needs consideration when the outlet is placed above the board. Too long a cord will wrinkle garments being ironed; too short a cord will pull and hinder the ironing job. The Oregon studies showed that a cord 5½ feet long is needed when the outlet is on the wall faced by the worker and 36 inches above the floor, but that a 6-foot cord is needed for an outlet on a side wall. This applies to a standard-size board which measures 54 by 14 inches.

Keep Your Refrigerator Efficient

Next time you clean your refrigerator, get out your vacuum cleaner attachments and dust the condensing coils or plate.

An automatic refrigerator needs more care than regular defrosting and cleaning of the food chamber, if it's to give you efficient year-round service.

The condensing coils or plate need to be clean so air can circulate around them and keep them cool. Dust interferes with

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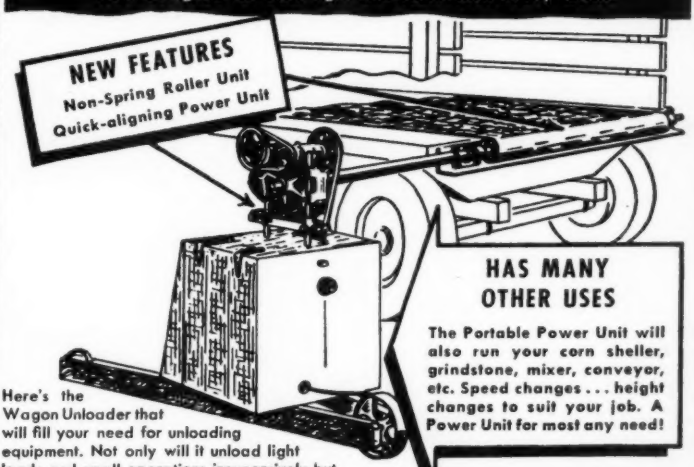

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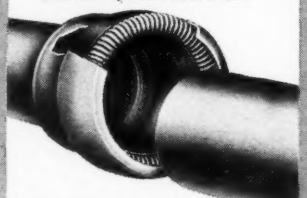
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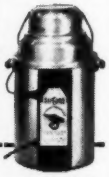
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normal working of the mechanism. One of the easiest ways to dust the coils or plate is to use the crevice tool on your vacuum cleaner. A long handled, soft bristled brush also helps. Remember to disconnect the refrigerator first.

As for the inside, frost on the cooling unit acts likes a woolly blanket. It insulates the unit so that the heat cannot be absorbed from the stored foods. Defrost the unit whenever the frost is one-fourth inch thick. Odors which collect with the frost on the cooling unit are removed with defrosting. To prevent any stale odors, wipe the interior lining, shelves and defrosted cooling unit with a cloth wrung from warm water in which baking soda is dissolved.

A check-up is in order every now and then to make sure foods in the refrigerator are always covered. Not only do uncovered foods lose flavor and goodness, but they let moisture into the air in the food chamber, later to deposit on the unit.

Rotate the ice cube trays as you use them to avoid off-taste ice cubes.

Bathe Dust from Lamp Shades

Washable lamp shades like a quick dip in the bath tub. Mrs. Edward High, of Kankakee, Illinois, finds the tub an ideal place to wash her shades because there are no sharp or rough sides to wear the shade. Any size shade can be rotated and swished through mild suds and rinse waters so quickly it hardly gets completely wet. A small hand brush helps along the seams where dust and lint get imbedded.

Fabric lampshades don't wash well. But fiberglass shades and parchment shades—real or paper parchment—can be dipped or sponged off with a damp sponge wrung out of clear water. General cleaners of the soapless variety work well, too.

Always follow the manufacturer's washing directions. Most shades have some glue used in their making. For that reason, avoid soaking shades and always dry them quickly. Once you start

The secret of cleaning shades successfully—wash and dry them quickly.

with a shade, stay with it until the drying period has started. The secret of washing and drying fabric shades is to do it quickly. That will reduce the loosening of glue and shrinking and tearing fabrics. Pat surface moisture up in a terry cloth towel. If the day is calm use an electric fan. Place the shade on the lamp with lamps turned on.

After washing, it's a good idea to clean the shade weekly with the dusting tool of your vacuum cleaner.

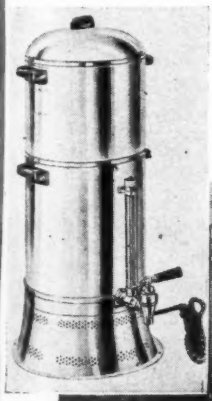
Freeing your shade of dust adds life to it and allows more light to get through to your room. Dirty bulbs, reflector bowls and shades can cut down lighting efficiency as much as 50%.

Good Coffee at Community Meetings

"Come and have a cup of coffee." That's a welcome invitation to any group. Today with electricity it is possible to do this just about anywhere you set up a meeting.

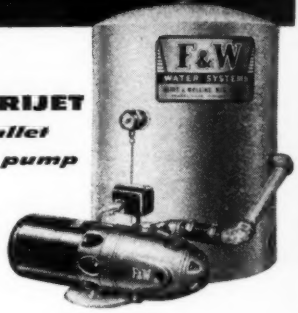
I've been in on a lot of outdoor meetings and demonstrations since September and have had *good* coffee served to me each time. Sometimes it was in a garage, other times a woodshed, machine shed, basement, the outdoor picnic table or a table at the corner of the house. What's more, all the coffee has been made right where it was served without any fuss or trouble.

A special type of aluminum drip-urn has been used each time. It will make 24 to 48 cups of coffee. Weighing just 6¾ lbs., it's easy to carry around from home to church, school or neighbor's house where a quantity of coffee is needed. It has the Underwriters' Laboratory approval, an air-cooled electric base and a permanently attached appliance cord. A high-low toggle switch makes it possible to bring water to a boil, then hold the dripped coffee at good serving temperature. It's a sure way of having consistently good coffee without the guess work and pot watching that has been necessary with boiled water and coffee bags. Price about $30.



Coffee from the urn being served at the Roy Kramer Electric Demonstration Farm near Waterloo, Iowa. About 500 visitors inspected the farm which is sponsored by Iowa State College and the Iowa Utilities Association. The insert shows the new model urn.

HERE'S HOW F&W Extra-Performance Saves You Money



VARIJET bullet pump

GIVES 40-70% MORE WATER ON SHALLOW WELLS

This performance means your first cost is lower for any capacity. The F&W VARIJET gives this extra water while using less electricity. This means your electric bill is lower. And it all adds up to longer life — more dependability.

You get these savings *plus* completely automatic, whisper-quiet operation with an F&W water system. There's an F&W for every capacity, every well depth. And the F&W *Multi-Stage Pump* stands out with performance on deep wells as the VARIJET does on shallow. Each pump is factory tested for pressure and capacity. Backed by a written guarantee and Flint & Walling's 84 years experience.

Colorful new book shows all models. Gives helpful facts for selecting right pump for *your* farm and home needs.

SEND FOR FREE NEW BOOK!

"Running Water for Rural Homes"

FLINT & WALLING MFG. CO., INC.
295 Oak St., Kendallville, Ind.

I want latest water system information. Rush me my free copy of "Running Water for Rural Homes."

Name_____

Address_____

City_____ State_____

FULL HALF-CIRCLE (180°)
SWINGING FEED TABLE

EAGLE
CROP-BLOWER

— for fast handling and blowing of cut forage and feed crops into silos. Handle as much as 20 to 40 tons per hour — save time and labor. Feed table swings in full 180° arc — no time lost "spotting" wagon at the Eagle Crop Blower — feed table easily and quickly rolled to and away from wagon.

Write for folder and name of nearest dealer — address Dept. EF-250.

Eagle Manufacturing Co., Appleton, Wis.
Farm Equipment Since 1888
Forage Harvesters—Silo Fillers—Crop Blowers
—Cob Corn Huskers—Electric Barn Cleaners.

Sewing Machine Pointers

This season's fabrics and fashions will be easier to sew if you take time out now for careful adjustment of your sewing machine.

The popular sheer materials require even stitching and right-sized needles. Have a good supply of machine needles. Perfect stitching requires a needle that is perfectly straight, has a smooth eye and a sharp point. When a needle has been bent or blunted, as often happens in sewing, it should be discarded.

A crooked needle skips stitches, a rough-edged eye frays and breaks thread, and a blunt point puckers or snags the fabric.

The needle also should be the right size for the thread, just as the thread should be the right weight for your fabric. Too coarse a needle leaves noticeable holes in the fabric which spoils the appearance of the stitching. Too fine an eye wears out a heavy thread. The book of directions which comes with the machine usually gives the size needle to use with different weights of thread.

When threading the machine

MONEY FOR LETTERS That Help Readers

WHAT IS YOUR MOST APPRECIATED ELECTRIC CHRISTMAS GIFT? That is the subject we want you to write letters about this monh. You have had a month now to try them. Or, maybe the gift came on some previous Christmas. Write your letter to tell other farm people why you like it, how and where you use it, what difference it has made for you or the family. The gift may have been made to you, or to some other member of the family, or to the whole family.

The letter we think our readers will get most from will win $10. All other letters or parts of letters used will be paid for at space rates.

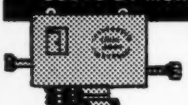
Send your letter to Nan Shaw, Housekeeping Editor, ELECTRICITY ON THE FARM, 329 Memorial Union, Ames, Iowa. It must reach her by March 4. Awards will be announced in the May issue.

CLEAR
SOFT
WATER
ON YOUR FARM

saves soap, saves work, saves clothes. You can now have it at very little cost. This free booklet explains how. No obligation. Write for it.

Oshkosh Filter & Softener Co., Oshkosh, Wisconsin

CUT YOUR MILKHOUSE HEATING COSTS BY MORE THAN HALF



HEET FLO
"HEAT PUMP"
Pat. Pend.
ONLY $59.95

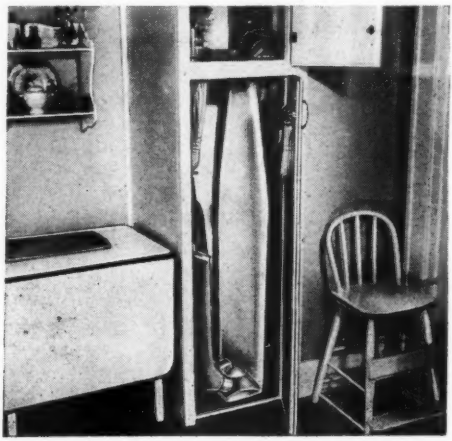
With Heet-Flo control (only $59.95) you can convert your milk cooler to a heat pump and heat your milk house with your milk cooler.

See your dealer or write us today for information.

DAIRYLAND EQUIPMENT CO.
4424 Excelsior Blvd., Minneapolis 16, Minn.

Planned Cleaning Closet

A cleaning closet is an aid to orderly and easy housekeeping. Place it handy to all parts of the house. If you haven't found space for it elsewhere try to work it into your kitchen plans. This closet hugs the side of a chimney. Measurements were carefully taken of the vacuum cleaner, ironing board, broom, and dry mop. The upper compartment offers convenient storage for the hand iron, flashlight, fuses, and small repair tools.



4900—The younger set loves polka dots, too. Add a touch of eyelet-embroidery insets in the bodice and skirt. It buttons down the front and ties in a big bow at the back. Sizes 2, 4, 6, 8, 10. Size 6 takes 1⅞ yards of 35-inch material; 1½ yards of 1½-inch eyelet.

4944—It's easy to sew this sweet ensemble with the swingy skirt and pert bolero. The skirt is a full circle, the bolero's sleeves are cut in one with the jacket. Delightful in a checked taffeta with a crispy white blouse. Sizes 12, 14, 16, 18, 20. Size 16 requires 5¼ yards 39-inch fabric for bolero and skirt, 1⅝ yards for the blouse.

Send TWENTY-FIVE CENTS (in coins) for each pattern to: ELECTRICITY ON THE FARM 196, Pattern Dept., 243 W. 17th St., New York 11, New York.
FIFTEEN CENTS more for the new Spring Pattern Book with a free pattern printed in the book.

needle, pass the end of the thread through the eye from the grooved side. Then when the needle goes down into the plate underneath, the thread lies in this long groove and does not catch or break.

Tucking, ruffling, cording and matching edgings, popular trimmings this year, are easily achieved with your machine attachments. A practice session for getting acquainted with the tasks the various attachments can do will make your sewing go faster.

Most attachment sets include the edge stitcher, which will add lace or braid to turned edges, apply narrow bias trim, and stitch on bias plaiding or yarn designs. There is also the hemmer which sews on straight or slightly gathered lace at the same time a hem is being stitched. It can be used to add color to a narrow hem by using embroidery floss on the bobbin and a long stitch.

Quick Butterscotch Rolls

Make breakfast specially good with butterscotch rolls. They're the quick kind, made from a standard biscuit recipe. Roll the enriched flour biscuit dough out to a rectangular sheet about one-fourth inch thick. Spread with soft butter and sprinkle with brown sugar. Roll up like a jelly roll and cut into one-half inch slices. Put into each muffin cup, one-half teaspoon butter, one teaspoon brown sugar, and sprinkle with one-half teaspoon water. Place the biscuit slices cut side down in the cups. Bake in a hot oven (425 degrees F.) 12 to 15 minutes.

Heat for Your Early Chicks

. . . . . (Here from page 14)

chick brooding as we practice it. High temperatures have been found to be the important cause of cannibalism in chicks. The electric brooder provides heat primarily under the hover and does not raise the temperature of the brooder house very much.

We have brooded with coal, oil and electric brooders; in warm weather and cold weather. Now that we are all electric for both late and early chicks, with much less work, we sit back and watch 'em grow.

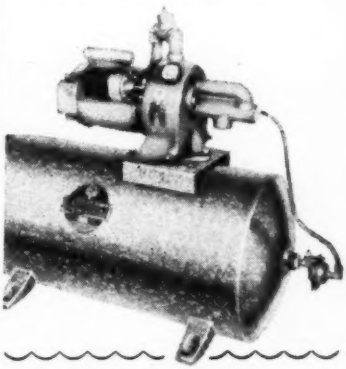
PLENTY OF RUNNING WATER AT LOW COST WITH A RAPIDAYTON

AS LONG as you have any water in your well, there's a RAPIDAYTON model which will deliver that water under pressure to your kitchen, bathroom, garden, lawn or barn.

In addition to the many tried and true RAPIDAYTON Models there is now a complete *new* line of RAPIDAYTON jet pumps for both shallow and deep wells. These new pumps bring the joys and conveniences of running water to farm homes all over the country.

These new pumps are modern in every respect, yet they are moderately priced. Their performance is masterful. Their design is superb. They come in a wide range of sizes and can be furnished with either vertical or horizontal tanks.

See your dealer first but fill out the coupon below and mail it TODAY for complete information on this new line of jet pumps.



The Dayton Pump & Mfg. Company
Dept. EF, 500 Webster St., Dayton 1, Ohio
Please send me complete details on RAPIDAYTON Jet Pumps.

Name_____

Street or R. F. D._____

Post Office_____

State_____

for Junior Partners

Opportunity vs. Security

Everyone wants to feel secure.

Babies and small children have one type of security. Someone provides them with food, clothing, shelter, medical care. In turn they must abide by certain parental restrictions.

The criminal in jail has security. He is fed, clothed and guarded from harm, given medical care. But he does not have freedom, and most opportunities are lost to him.

The dog chained to the doghouse has security. But he craves the freedom of the open fields where he can hunt or play with you; or an opportunity to lie before the fire.

It is possible to have a degree of security and still retain our freedom. That is the system we have had in this country. We have police and fire protection, homes and land that we own, more interesting work at better pay than most peoples of the World.

With this knowledge before us, there are never-the-less many people who want the government to do more for us—to provide guaranteed incomes, pensions, insurance, medical care. They think the government can do better for us in spending our money than we can do for ourselves. Perhaps it can. We are now turning over to it one-fourth of our earnings in taxes.

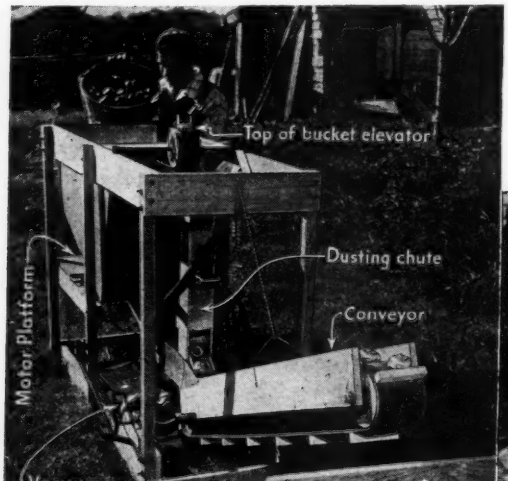
The choice between imposed security and opportunity is pressing upon us. You younger people should think about it. As you do, remember we cannot always remain infants and also grow to manhood. Think of the security and opportunities of the man in the cell; the chained dog. Our early settlers came to this country to gain freedom from too much government.

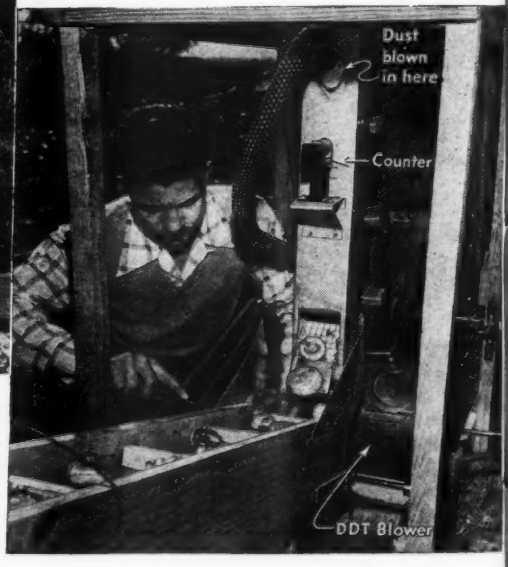
Geo. W. Kable

Johnny Williams' "Bulb Snatcher"

Johnny Clive Williams was one of the six national scholarship winners in the 4-H Better Methods Electric contest in 1949. He is 16, and his home is on a 134 acre Alabama farm where they raise gladiolus bulbs. Johnny has a good record with prize winning Jerseys, high yielding corn and in 4-H earnings and leadership. The thing which has focused most attention on Johnnies' work, however, was a machine he made. It was an unusual machine. It got unusual attention. It was transported to the Club Congress in Chicago where a lot of people had a look at it. Somebody dubbed it a "bulb snatcher."

Gladiolus bulbs on the Williams Farm are always counted for sale to florists, and they are dusted with DDT to protect them from insect damage. It was not too arduous a task, but it would take a man about 3 working days to handle 30,000 bulbs. The "bulb snatcher" does a better job in only 3½ hours.





Above: End view of Johnny Williams' bulb duster and counter. Bulbs being dumped into hopper. One bulb is coming over the top of the bucket elevator to fall into the dusting chute. Entire mechanism driven by a small motor and V belts. The machine cost $46.50 without the motor. **Right:** Closeup of dusting and counting mechanism. The machine operates with practically no attention after the hopper is filled.

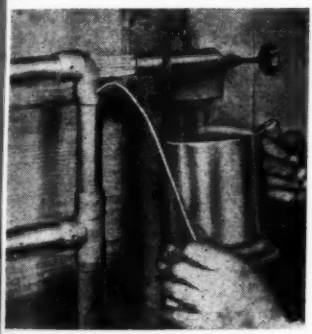
The accompanying pictures show how the bulb duster and counter is made. It consists of a metal hopper into which the bulbs are dumped. A small vertical bucket conveyor picks up one bulb per bucket and drops it into the top of the counting and dusting chute. An old cotton poison duster blows the DDT through a vacuum cleaner hose into the top of the chute and directs it downward. The excess dust is picked up at the bottom of the chute by an old vacuum cleaner and deposited in the bag to be used again. In coming down the chute the bulbs trip a counter mechanism. From the bottom of the chute the bulbs are carried by a belt and slat conveyor up into a tray.

The whole mechanism is driven by a fractional horsepower motor and V belts through shafts and pulleys.

Not many farms have need for bulb treaters and counters; but there is hardly a farm that does not have some job that could be done easier and better electrically. Just keep your eyes open for jobs that are done the hard way now, but might be done by motors, with conveyors, with water under pressure or with the aid of electric heat or light. It might surprise you. And if you do a good job that might be helpful to someone else, we would be pleased to pay you for a story about it.

Joints in Copper Tube

Most of us know how to thread an iron pipe and to make connections with unions, ells and T's. Red or white lead is spread



on the threads to make the joint tight.

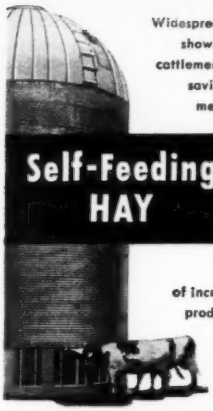
Not so many of us have used copper tubing. Thin walled copper tube comes in either hard or soft temper depending on whether it is to be used in long straight runs or bent. With both kinds, the joints are made in the same manner.

There are two kinds of joints. One uses flared pipe ends with solid screwed fittings such as are common in gas lines of cars and tractors. The other is the soldered joint used generally in house plumbing. Since copper tube is coming into wide use in plumbing, the method of making the joint is of interest.

Ells, T's and other connections are made to fit the tubing closely. After making a square cut across the tube with a hacksaw, the burr is removed with a file. The outside of the end of the tube is then cleaned with steel wool or sand cloth. The same is done to the inside of the fitting. This is so the solder will have a clean surface to adhere to. The cleaned surfaces are then completely covered with liquid flux by means of a brush. The assembly is put in place and the fitting heated with a blow torch until tube and fitting are hot enough to cause the solder to flow freely. Wire solder is then applied to the edge of the fitting or in the feed hole, if one is provided. Capillary action will cause the solder to fill the space between the tube and fitting. Be sure to feed the solder until the hole is full and it appears as a ring at the edge of the fitting.

The joint will be as strong as the tube.

The average price of electricity to residential users fell in 1949 from 3.01c per kilowatt-hour to 2.96c, an all-time low.



Self-Feeding HAY

Widespread interest is being shown by dairymen and cattlemen in this new labor saving, highly efficient method of curing and handling chopped hay. Send TODAY for your FREE copy of illustrated booklet explaining the new method of increasing milk or beef production with greatly reduced feed and labor costs.

MARTIN STEEL PRODUCTS CORP.
204 Longview Ave., Mansfield, Ohio
Please send me FREE literature on Self-Feeding Haymaker ☐ Silo ☐ Cribs ☐ Bins ☐
Name.....
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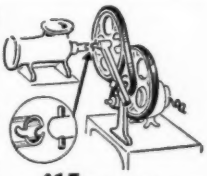
Hand Cranked Machines to ELECTRICITY



With this portable versatile, speed-reducing unit you can now electrify your: Corn Sheller, Fanning Mill, Grind Stone, Meat Grinder, Butter Churn, Cream Separator, Cement Mixer, Potato Grader, Ice Cream Freezer and other handcranked appliances.

$15 less motor for single drive ⅓ to ¾ H.P. $20 less motor for double drive ⅓ to ½ H.P.

Simply attach slotted coupling to your appliance, move up our speed reducer, engage pin and coupling and let power do the job.

Couplings available ½" at 70c to 1" at $1.10. Specify size of appliance shafts, we'll supply coupling to fit.

A Tried and Proven, Portable Speed Reducing Unit
A. H. MUTSCHLER, MIDDLEBURG, PA.

GRO-QUICK HEATING CABLE
FOR HOTBEDS-COLD FRAMES-OPEN GROUND

Cut Germination Time 2 3. Root Cuttings in 6 Days
Seed Up in 30 Hrs. Transplant 2 Weeks Sooner!
J40A Cable & Thermo: for 1 sash..... $6.75
S80A for double sash — 36 sq. ft..... $9.00
J40 40 ft. 200 watt, cable only..... $2.25
S80 80 ft. 400 watt, cable only..... $4.50
Special cables for benches, forts, cabinets. Shipped direct prepaid if not stocked by your dealer. Write.
We refer inquiries to our nearest Dealer.,
GRO-QUICK, 370 W. Huron St., Chicago 10, Illinois
FREE PLANS USER REPORTS

CAPON

"ELECTRIC" DRY CELLS, batteries or light socket do it. Without tearing or twisting of delicate parts. Press button, the rooster becomes a CAPON. Profit and pleasure are yours, illustrated bulletin explains. A post card with your name and address brings it to you. Without cost or obligation.

HOWARD BEUOY, No. 16, Cedar Vale, Kans., U.S.A.

The amount of coal required for generating a kilowatt-hour of electricity dropped in 1949 from 1.3 pounds to 1.2. Increased efficiency did it.

By using an electric sewing machine, 17-year-old Patricia Seidler found she could save 8 hours, 1,167 steps, and produce a much better dress than she could formerly by hand sewing. Patricia, who lives in Portland, Oregon, has been active in 4-H work for 4 years.

with NEW

FAN-PAC

POULTRY HOUSE VENTILATOR

★ **Healthier Flocks!**
★ **Better Layers!**
★ **More Pleasant Hen House Work!**

FAN-PAC Poultry House Ventilator automatically regulates temperature and humidity in your hen house for better egg production and bigger profits. FAN-PAC keeps air dry and clean, makes hen house chores more pleasant. Less litter changing. Helps prevent disease among flocks. One FAN-PAC provides ventilation for up to 250 mature hens! You can easily install it yourself!

LARGER SIZE FOR DAIRY BARNS
For greater milk profits and healthier herds investigate the FAN-PAC Dairy Barn Ventilator.

SEND TODAY FOR FREE BOOKLETS!
DeBothezat Fans Division
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Please send FREE booklets on:
☐ Fan-Pac Poultry House Ventilator
☐ Fan-Pac Dairy Barn Ventilator

Name _____
Town _____ State _____
County _____ RFD _____

Finalists, 1949 National 4-H Shearing Contest in the order of their finish. Clint Reese, 18, Reese, Watauga County, N. C., winner stands next to Mr. E. A. Warner, Sunbeam Corporation, Manager of the 4-H contest; Lawrence Yoder, 21, Walton, Harvey County, Kansas; Donald Bliss, 17, Newkirk, Kay County, Okla.; Clayton Cary, 18, Forest, Hardin County, Ohio; Le Jean Marshall, 18, Allen, Hillsdale County, Mich.; Pat Gibson, 19, Wayside, Washington County, Miss.; Robert A. Lemler, 19, Bourbon, Marshall County, Ind.; Ben Norris, 17, Reese, Watauga County, N. C. Mr. Henry Mayo, Extension Animal Husbandman, Purdue University, who acted as superintendent of the contest stands at the extreme right. Reese and Yoder won college scholarships. All other finalists received U. S. Savings Bonds.

Clint Reese 4-H Sheep Shearing Champion

Clint Reese, 18 year old high school senior of Reese, North Carolina, won top honors in the National 1949 Sheep Shearing Contest held at the International Livestock Exposition. Reese's speed, technique and quality of workmanship enabled him to outpoint 26 competitors from 18 wool-producing states. He won a $200 college scholarship donated by Sunbeam Corporation. Laurence Yoder, 21 year old farm youth from Walton, Kansas won second place with a total score of 91.6

Reese lives on a 105-acre farm. He has been active in 4-H Club work for three years. Next September he will enroll at North Carolina State College, where he will major in Animal Husbandry. Shearing against tough competition is no novelty to Clint. He represented his state in the 1948 event, finishing fifth.

Local, state, and district 4-H shearing contests are held throughout the United States during the year. The National 4-H Contest is the culmination of these. The primary purpose of the contests is to encourage sheep club members to learn how to harvest the farm flock wool crop. Other objectives are: (a) to learn the proper method of handling sheep while shearing; (b) to remove the fleece in one piece, free of second cuts; (c) to learn to shear with a machine, so that all of the wool is obtained; (d) to learn the method and importance of tagging ewes before lambing time.

Agricultural research shows that it takes from 30 to 80 tons of moisture per season to grow a bushel of wheat.

Smalley

Chop-grinds feed

Chop-Grinding makes feed more palatable and digestible than powder-fine grind. Smalley rotor has *both* knives and hammers. Chop-grinds cob meal, fodder, hay, grain, faster than usual hammer mills. Slicing saves power. Safe, pneumatic feed. WRITE—

SMALLEY Mfg. Co.
535 York St.
Manitowoc,
Wisconsin

HATCHET HAMMER MILL
No. 5

FOR 5 H.P. ELECTRIC MOTORS

Questions and Answers

Fan For Drying Grain

▶**Question:** *I have two bins which could be fixed for drying grain. They measure 9½' x 6' and would be 8' deep. What size fan would it take for this?* W. R. H., Ohio

▶**Answer:** A fan delivering 2,000 cu ft of air per minute against 1" of static pressure would handle both of your 9½' x 6' bins at once. If you plan to dry them one at a time, a fan with a capacity of 1,000 cfm at 1" static pressure would be sufficient.

Small Chlorinator for Farm Use

▶**Question:** *I noticed in the COVERALL issue that a small chlorinator has been put on the market. It stated that they are automatic. Can you tell me what company makes them?*
W. L., Pennsylvania

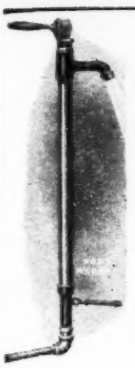
▶**Answer:** These chlorinators are installed right in the line of your water supply. They should do an excellent job of purification. They may be obtained from the Paddock Sales of Texas, 3717 Atwell Street, Dallas 1, Texas.

Water Spurts from Pipe

▶**Question:** *I have a shallow well electric pump which is hooked up direct to my kitchen sink. I also have a faucet in the basement, right off the pump. The water runs through this faucet perfectly but when I open up the sink faucet it runs in a very slow stream, then stops, then gushes out, then it squirts. Even when both faucets are closed the pump starts to work about every three minutes. Can you help me remedy this situation?*
J. R. R., Mich.

▶**Answer:** The best remedy for your water system would be the installation of a pressure tank. With this, the pump supplies the tank with water and compresses air in the dome. This air in turn forces the water through the piping. This would eliminate the gushing at the sink faucet and would keep the motor and pump from operating so frequently.

Any reciprocating pump supplies water in a pulsating flow. The water in the pipes above the faucet



VOGEL (A PATENTED)
FROST-PROOF HYDRANT

- Will never freeze when properly installed.
- Running water available all year 'round.
- Reduces fire hazard.
- Increases operating efficiency.
- Over a million Vogel Frost-Proof Closets and Hydrants have been sold.

The handle in this position shows you that the water is positively shut off. A leaking hydrant is sure to freeze in winter.

For information, see your nearest Plumbing Supply House—or if you write us direct, state the county in which you are located.

JOSEPH A. VOGEL CO. WILMINGTON 99 DELAWARE

Speed Way

Portable Bench and Hand GRINDERS

No. 117 Bench Grinder $14.95

No. 117. Long life, air cooled motor. 1 "coarse" and 1 "fine" 4½" x ⅝" wheels in 1-piece cast aluminum housing with sliding switch, rubber feet, cord and plug.

G. A. Kit $13.95

G. A. Kit. A No. 129 Electric Hand Grinder with 3/32" and ¼" collets and 16 mounted stones, cutting burrs, brushes, wheels and disks.

No. 128. Industrial quality ¼" H.P. shaded pole A.C. motor. Adjustable rests with angle guides for grinding of drills, bits, chisels, etc. Two 6" x ¾" grinding wheels. Efficient speed. Encased in die cast aluminum housing. Plastic eye shields, mounted switch, 3-wire cord and plug.

Write for Circulars and name of your local dealers.

No. 128 (¼ h.p.) Bench Grinder $29.95

SPEEDWAY MFG. CO.
1846 South 52nd Ave. CICERO 50, ILLINOIS

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at the pump acts as a reservoir so that the water from the faucet flows evenly. You do not have this reservoir for your sink faucets.

As your system stands any slight drip at a faucet will shortly reduce the pressure in the pipe line. That is why your pump operates so frequently at present. The dealer from whom you purchased the pump can supply you with a pressure tank.

Convert Cooler to Locker

▶**Question:** *We have a large walk-in cooler which has been used for milk. We are no longer in the milk retailing business. Could we convert part of this cooler for use as a freezer and still have part of it for use as a milk cooler? This would save buying a freezer. What equipment would we need? How much would it cost?*

A. S. R., Pennsylvania

▶**Answer:** You could split your cooling room into two sections and maintain freezing temperature in one of them. The cost of such a conversion would depend entirely on the present construction and the capacity of your present refrigerating unit. Some of the things you would have to provide would be:—at least 8" to 10" of insulation for ceiling, floor and four sides of the freezer room. An insulated door between the two sections. A separate blower unit or cooling plates for the freezing room. It is impossible for me to make an estimate of the cost of these alterations. I would expect them to be equal to or greater than the cost of a separate farm freezer.

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Electric Prod Pole

▶**Question:** *Can you furnish me with information on a hand electric shocker that is used in herding stock?* G. W. E., Maryland

▶**Answer:** Electric prod poles used for herding stock are manufactured by:—International Electric Co., 1836 W. North Avenue, Chicago, Ill.; O. M. Franklin Serum Company, Ft. Worth, Texas; Western Mfg. & Supply Co., Denver, Colorado; Tractor Replacement Parts Co., 2517 Wabash Avenue, Chicago, Ill.

House Heating From Cow Barn

▶**Question:** *The temperature of my cow barn near the ceiling is probably 60°-65° when I maintain the barn temperature 50°-55°. The stable has a high ceiling. I have read about heat pumps which take the heat from the ground or the air. Could I use about a thousand feet of pipe near the barn ceiling instead of a well as a heat source for a heat pump?*

Please give your opinion of my cow barn as a source of heat for my house. J. E. K., Vt.

▶**Answer:** In our opinion, cows are a rather impractical source of heat for houses.

An experimental barn installation of this kind has been made in Sweden. A heat pump is used with the heat absorber placed in the barn ventilation exhaust duct. The condenser is located in the house. Barn temperature is thermostatically maintained at 59°F using either natural draft or fan types of ventilation. The heat absorber takes moisture out of the barn air and much of it is recirculated. This saves heat.

System was designed to heat house with an outside temperature average of 28°F. In colder weather supplemental electric heaters are used. The heat pump carries the major part of the heating load.

This installation was tried last winter. Preliminary calculations from the tests show that the system theoretically is feasible. Expectations are that 10 to 15 milking cows will be sufficient for heating a five room house.

More work will have to be done before such a system can be recommended. Both house and barn will require good insulation.

The trouble is that in cold spells when you need the heat most, the cows also need it and the heat loss from the barn would make the heat pump operate at its lowest coefficient of performance. Northern states are handicapped over southern states in the use of the heat pump. Your best source of heat is probably ground water.

The Cover Picture

One of the "Big Squirt" rotating sprinklers that covers a circle upwards to 200' in diameter. It operates under a pressure of about 100 pounds per square inch and will irrigate from 1 to 2.8 acres at one setting.

Welder from Generator

▶**Question:** *I want to make a welder out of a generator. What should be used on a 32v 750 watt Delco generator to increase the arc?* C. L. T., Va.

▶**Answer:** In general we do not recommend converting generators into welders. Besides the cost and labor of conversion, the resulting equipment is usually a poor substitute for a regular farm welder.

The main trouble with the 32v 750 watt Delco generator is that it is too small. A welding amperage of 20 is very low.

For information and plans for rebuilding generators write to the Welders Club of America, P. O. Box 3432, Chicago 54, Illinois.

Milkhouse Ventilation

▶**Question:** *I have a milkhouse that is always wet and frosty. It's connected with the barn but I have a vestibule in between. There is no means of ventilation as yet. Would like to know what means I should use. Also would like to know an*

economical means of having heat in such a room. J. J. S., Wis.

▶**Answer:** The February 1949 issue of ELECTRICITY ON THE FARM Magazine has an article summarizing the different types of milkhouse heat. If you heat your milkhouse, you will need little or no ventilation other than seepage around the doors and windows. The wet and frosty condition will be eliminated.

The most common type of milkhouse ventilation used is a duct leading through the roof which is capped and baffled. This duct is usually about 6" square. It operates simply as a chimney. It should have a damper.

Protection for Water Tank

▶**Question:** *I purchased an old 3500 gal tank made of ½" sheet iron. It is still in very good condition. I am going to use this tank for my water system on the farm.*

My problem is this. The inside is rusty and I wish to know how to remove most of the rust. I am scraping it with a steel wire brush. Is there some type of paint I can put on the inside so as to stop further rusting and to keep the water from having a rusty taste?

D. S. L., Mont.

▶**Answer:** The best way to remove the rust from your tank is by means of a scraper. This will remove the scale which a wire brush would simply glide over. Of course, if the rust coating is very light and scale has not formed, the brush may be sufficient.

After the tank has been cleaned it may be painted. The least expensive job will probably be two coats of red lead. However, you would probably have to renew this every other year for complete protection.

One of the best coatings for your tank is Bitumastic enamel, a coal tar product of the Koppers Company, Pittsburgh 19, Pa. Properly applied this material should be good for 15 years or more.

The average annual use of electricity per farm customer is now 2,200 kilowatt-hours, a jump of 200 kilowatt-hours in the past year. Residential customers averaged 1,685.

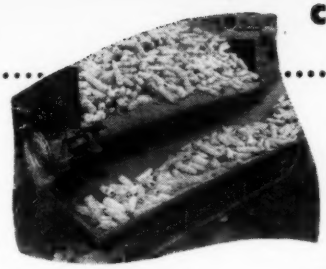
Heat Lamps

. . . . . (Here from page 17)

having water drip or splash on ordinary glass bulbs. Water may break them and the hot glass fall into the litter.

There is little danger of setting fire with lamps kept 6 inches or more away from open litter. It is best, however, not to concentrate too much radiant heat on one spot of deep, dry litter. Radiant heat penetrates. Dry litter acts as an insulator so the heat does not get away. It is conceivable that enough heat could be held in deep, dry litter to ignite it.

Heat lamps are a safe and convenient source of spot or area heating. They provide radiant heat the instant the lamp is turned on. They heat the air very little, but the rays heat the objects on which they are directed. Knowing how to use such lamps wisely and safely, you will find many places for them around the farm and home. They are inexpensive to buy and install.



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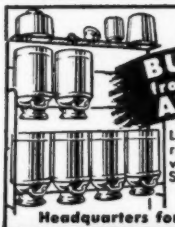

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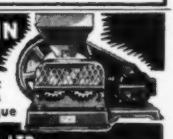

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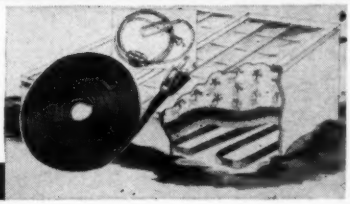

THE SMITH-GATES CORP. Plainville, Conn.

Next Summer's Rain

. . . . . (Here from page 9)

systems. Aluminum pipe of 4" diameter that will stand pressures of 280 lbs per sq in. weighs less than 20 lbs per 20' length; 3" pipe, 11 lbs per length; 2" pipe, 7½ lbs per length. Light weight steel pipe with integral couplings is also available. One man can pick up and move the pipe lines. All can be cleared out of the way for field operations.

Quick couplings make it possible to connect or disconnect the pipe sections easily and to have leakproof joints. Couplings are tapped for risers to which the sprinklers are attached. These risers, usually only a foot or two long, may extend above the trees in orchards.

Usually a main distribution pipe is laid down through the center or along one side of the field, and movable laterals run out from it. The spacing of the laterals and the sprinklers in the pipe is a matter of design to fit the specific conditions.

For large pastures and fields, rotating sprinklers are in use which will cover nearly 3 acres at one setting. They will distribute up to 300 gallons of water per minute at pressures of 100 pounds. Each sprinkler would require in excess of 25 horsepower to supply the water.

On smaller acreages, sprinklers operating at 30 to 40 pounds pressure and spaced about 40' apart will cover a strip 60' wide. Sprinklers that operate on pressures down to 20 pounds are available. Power requirements are reduced in proportion to pressures. Sprinklers that turn at only one or two turns per minute will cover a greater area than fast turning sprinklers. Nozzles on sprinkler heads may be changed to sizes which will distribute the quantities and at pressures available.

The sprinkler system calling for the lowest pressures (4 to 20 pounds) is perforated portable pipe. It does not give as wide coverage as rotating sprinklers. As the pressures and coverage decreases, the labor of moving the system increases. Old fire hose has been used for water distribution. It is not too satisfactory because of high friction losses, and because it is heavy and hard to handle.

The system layout and size of sprinklers will depend on the lay of the land, crop, kind of soil and rate at which it will take up moisture, water supply, wind direction and velocity.

Some Suggestions

To those not familiar with irrigation, a few pointers might be helpful. Water is not just necessary for growth. When put on at the right time and in the correct amounts it will influence the size and flavor of tree fruits, the nutrients in pasture grasses and the quality and salability of vegetables and berries.

Water should be applied to keep crops growing rapidly—not to resurrect them after they start to dry up. Applying water too late may result in cracked fruit with a watery flavor, knobby potatoes and poor quality produce. If you contemplate irrigating, make up your mind on the basis of what has been accomplished in the past by neighbors, your experiment station or others. Get ready early so you can give the crops water when they need it.

Irrigation engineers recommend in general that truck crops should have an inch of water per week; pastures 2" to 3" every ten days during dry periods. Deep rooted plants require heavier irrigations but less frequently. Light irrigations tend to bring roots to the surface where they dry out quickly.

Be sure of your water supply. If there are no water laws in your state, make a written record of your use of water and have it witnessed. That record may be valuable to you later if water becomes scarce.

Water tables have been dropping rapidly in many parts of the United States. In the irrigated Santa Clara valley in California water was pumped from 25' wells in the 1920's. Now, wells must be put down 300'.

Electric power is trouble free and ideal for pumping, if it can be made available near the point needed. In the East, Middle-West and humid areas generally, only single phase farm lines are available. Except in a few places, this limits motors to 7½ or perhaps 5 horsepower units. If you are using motors for other purposes, they may be shifted to pumping periodically. Talk to your power supplier before buying electric pumps.

For readers interested in irrigation, we will be glad to mail you names of manufacturers of pumps, pipe, couplings, sprinklers. Many of them put out excellent bulletins describing irrigation methods, layouts and equipment.

A low pressure rotating sprinkler system with portable lightweight pipe on the farm of Wm. Hear, Lapeer County, Michigan

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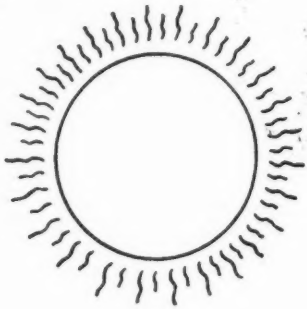

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